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## Chapter 1

# Purpose & Requirements of Sampling for Tax Auditing

## Statutory Requirements

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The Comptroller of Public Accounts has the statutory authority to conduct sample audits per Section 111.0042 of the tax code. The use of sampling techniques is appropriate if any of the following conditions exist:

- The taxpayer's records are so detailed, complex or voluminous that an audit of all detailed records would be unreasonable or impractical.
- The taxpayer's records are inadequate or insufficient, so that a competent audit for the period in question is not otherwise possible.
- The cost of an audit of all detailed records to the taxpayer or to the state will be unreasonable in relation to the benefits derived, and sampling procedures will produce a reasonable result.

Section 111.0042 of the tax code also states two ways that taxpayers can challenge samples:

- If a taxpayer can demonstrate that a transaction in a sample period is not representative of the taxpayer's business operations, the transaction shall be eliminated from the sample and be separately assessed in the audit.
- If the taxpayer demonstrates that any sampling method used by the comptroller was not in accordance with generally recognized sampling techniques, the audit will be dismissed as to that portion of the audit established by projection based upon the sampling method, and a new audit may be performed.

Thus, it is imperative that the auditor designs the sample to reflect as nearly as possible the normal business operations and follows generally recognized sampling techniques.

Also imperative is that sampling should not be utilized when records are inadequate to reflect accurately the business operations of the taxpayer. Without good internal controls and records, the auditor should determine the best information available and base the audit report on that information (i.e., estimate).

Regardless of whether a sample or estimate procedure is performed, Section 111.0042 states "Before using a sample technique to establish a tax liability, the comptroller or his designee must notify the taxpayer in writing of the sampling procedure to be used." Per Hearing No. 43,877 "Moreover, with regard to estimation, Section 111.0042 does not contain an express requirement mandating the Comptroller to issue a written notification of estimation procedures, even though the agency does so as a matter of standard practice. See Comptroller's Decision No. 37,262 (1999) (The requirements of Section 111.0042(c) do not apply to estimated audits.) And if no statutory requirement exists for such written notification, then there is no legal basis to support Petitioner's request for deletion of the estimated exams."

## Professional Standards

The Comptroller of Public Accounts uses sampling to increase the overall coverage and efficiency of the tax audit program. The use of sampling has been authorized by statute. The sampling procedures used in the audit of any individual taxpayer must be in accordance with generally recognized sampling techniques. SAS No. 39 and Audit Sampling issued by the American Institute of Certified Public Accountants (AICPA)

are the primary sources of guidance. Generally accepted auditing standards require that any actions taken or any audit procedure applied as a result of sampling be based on sufficient competent evidential matter. The text of SAS No. 39 provides the framework for a sampling program. Although the material is primarily intended to apply to audits for the purpose of expressing an opinion on financial statements, it is nonetheless applicable to tax compliance auditing.

## Generally Accepted Auditing Standards

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The generally accepted auditing standards as approved and adopted by the membership of the American Institute of Certified Public Accountants are as follows:

### General Standards

- The auditor must have adequate technical training and proficiency to perform the audit.
- The auditor must maintain independence in mental attitude in all matters relating to the audit.
- The auditor must exercise due professional care in the performance of the audit and the preparation of the report.

### Standards of Field Work

- The auditor must adequately plan the work and must properly supervise any assistants.
- The auditor must obtain a sufficient understanding of the entity and its environment, including its internal control, to assess the risk of material misstatement of the financial statements whether due to error or fraud, and to design the nature, timing, and extent of further audit procedures.
- The auditor must obtain sufficient appropriate audit evidence by performing audit procedures to afford a reasonable basis for an opinion regarding the financial statements under audit.

### Standards of Reporting

- The auditor must state in the auditor's report whether the financial statements are presented in accordance with generally accepted accounting principles.
- The auditor must identify in the auditor's report those circumstances in which such principles have not been consistently observed in the current period in relation to the preceding period.
- When the auditor determines that informative disclosures are not reasonably adequate, the auditor must so state in the auditor's report.
- The auditor must either express an opinion regarding the financial statements, taken as a whole, or state that an opinion cannot be expressed, in the auditor's report. When the auditor cannot express an overall opinion, the auditor should state the reasons therefor in the auditor's report. In all cases where an auditor's name is associated with financial statements, the auditor should clearly indicate the character of the auditor's work, if any, and the degree of responsibility the auditor is taking, in the auditor's report.

## Generally Recognized Sampling Techniques

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Statement of Auditing Standards No. 39 is the primary source of professional standards and guidance on sampling.

- .01 Audit Sampling is the application of an audit procedure to less than 100 percent of the items within an account balance or class of transactions for the purpose of evaluating some characteristic of the balance or class. This section provides guidance for planning, performing, and evaluating audit samples.
- .02 The auditor often is aware of account balances and transactions that may be more likely to contain misstatements. He considers this knowledge in planning his procedures, including audit sampling. The auditor usually will have no special knowledge about other account balances and transactions that, in his judgment, will need to be tested to fulfill his audit objectives. Audit sampling is especially useful in these cases.

- .03 **There are two general approaches to audit sampling: nonstatistical and statistical. Both approaches require that the auditor use professional judgment in planning, performing, and evaluating a sample** and in relating the audit evidence produced by the sample to other audit evidence when forming a conclusion about the related account balance or class of transactions. The guidance in this section applies equally to non-statistical and statistical sampling.
- .04 The third standard of field work states, “The auditor must obtain sufficient appropriate audit evidence by performing audit procedures to afford a reasonable basis for an opinion regarding the financial statements under audit.” **Either approach to audit sampling, when properly applied, can provide sufficient audit evidence.**
- .05 The sufficiency of audit evidence is related to the design and size of an audit sample, among other factors. The size of a sample necessary to provide sufficient audit evidence depends on both the objectives and the efficiency of the sample. For a given objective, the efficiency of the sample relates to its design; **one sample is more efficient than another if it can achieve the same objectives with a smaller sample size. In general, careful design can produce more efficient samples.**
- .06 Evaluating the appropriateness of audit evidence is solely a matter of auditing judgment and is not determined by the design and evaluation of an audit sample. In a strict sense, the sample evaluation relates only to the likelihood that existing monetary misstatements or deviations from prescribed controls are proportionately included in the sample, not to the auditor’s treatment of such items. **Thus, the choice of nonstatistical or statistical sampling does not directly affect the auditor’s decisions about the auditing procedures to be applied, the appropriateness of the audit evidence obtained with respect to individual items in the sample, or the actions that might be taken in light of the nature and cause of particular misstatements.**
- .07 Some degree of uncertainty is implicit in the concept of “a reasonable basis for an opinion” referred to in the third standard of field work. The justification for accepting some uncertainty arises from the relationship between such factors as the cost and time required to examine all of the data and the adverse consequences of possible erroneous decisions based on the conclusions resulting from examining only a sample of the data. If these factors do not justify the acceptance of some uncertainty, the only alternative is to examine all of the data. Since this is seldom the case, the basic concept of sampling is well established in auditing practice.
- .08 The uncertainty inherent in applying audit procedures is referred to as audit risk. Audit risk includes both uncertainties due to sampling and uncertainties due to factors other than sampling. These aspects of audit risk are sampling risk and nonsampling risk, respectively.
- .09 [As amended, effective for audits of financial statements for periods ended after September 30, 1983, by Statement on Auditing Standards No. 45. Paragraph deleted by the issuance of Statement on Auditing Standards No. 111, March 2006.]
- .10 **Sampling risk arises from the possibility that, when, a test of controls or a substantive test is restricted to a sample, the auditor’s conclusions may be different from the conclusions he would reach if the test were applied in the same way to all items** in the account balance or class of transactions. That is, a particular sample may contain proportionately more or less monetary misstatements or deviations from prescribed controls than exist in the balance or class as a whole. For a sample of a specific design, sampling risk varies inversely with sample size: the smaller the sample size, the greater the sampling risk.
- .11 Nonsampling risk includes all the aspects of audit risk that are not due to sampling. An auditor may apply a procedure to all transactions or balances and still fail to detect a material misstatement. Nonsampling risk includes the possibility of selecting audit procedures that are not appropriate to achieve the specific objective. For example, confirming recorded receivables cannot be relied on to reveal unrecorded receivables. Nonsampling risk also arises because the auditor may fail to recognize misstatements included in documents that he examines, which would make that procedure ineffective even if he were to examine all items. Nonsampling risk can be reduced to a negligible level through such factors as adequate planning and supervision (see section 311, *Planning and Supervision*) and proper conduct of a firm’s audit practice (see section 161, *The Relationship of Generally Accepted Auditing Standards to Quality Control Standards*).

## Statistical vs. Non-statistical Sampling

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According to the AICPA Audit Sampling guide, cost-benefit is the determining factor of using either a statistical or non-statistical sampling approach. SAS No. 39 states that either approach is valid and involves sampling risk. Statistical sampling requires the use of statistical formulas to determine sample size and directly measure sampling risk whereas non-statistical sampling does not have these requirements.

Usually, results for statistical sampling are evaluated in terms of probabilities, which are defined as precision and confidence levels. Due to the variables associated with tax auditing (e.g. acceptance of resale certificates and other documentation), attaining these precision and confidence levels would not only be costly but also impractical.

Consider the following scenario: The legislature mandates that samples be accurate to 90 percent plus or minus 10 percent. At the conclusion of the audit fieldwork, the sample for deductions met the 90-10 test, but at the end of the 60-day letter period, deleting items for which a properly completed resale certificate was received reduced the sample results to 80-15. Even though the taxpayer has to pay less money and may be in total agreement with the audit, the sample by law must be expanded until the 90-10 test is met. Another 60-day period must be given, etc.

Audit Division does not use true statistical sampling for tax auditing; however, several statistically based formulas are used throughout the sampling process to aid the auditor in applying professional judgment for sample evaluation purposes. When a sample is carefully planned and designed, it more accurately reflects the appropriate tax change.

## Chapter 2

# Overview of the Sampling Process

### Overview

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- Gather information to plan the sample
- Define the population and stratify into various sub-populations as needed
- Compile base amounts
- Establish correspondence
- Choose the type of sampling unit and determine the sample size
- Select the sample units
- Perform an initial evaluation
- Perform a preliminary sample (short-test)
- Evaluate the short-test and make a stop-or-go decision
- Complete the sample examination.
- Project the results to the population.
- Evaluate the sample results.

Many of the steps listed above are not mutually exclusive. In fact, the first four are interdependent. Proper planning and decision-making in each of the above steps by the auditor will greatly affect the desired goals of the agency:

- Perform the audit in accordance with generally accepted auditing standards and generally recognized sampling techniques
- Perform the audit to yield a fair and impartial result in accordance with the normal conditions of the business
- Perform the audit in the most efficient manner

### Gather Information to Plan the Sample

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In order to successfully complete the steps in the sampling process, relevant information about the taxpayer should be obtained. The auditor should understand the normal conditions of the taxpayer's business and plan the sample accordingly. Listed below are a number of questions regarding accounting, reporting, and record storage systems. The answers to certain questions will affect sampling in virtually every case. Knowledge of these items should improve the quality of decision-making.

#### **Accounting**

- Has the company experienced any mergers, acquisitions, or divestitures?
- Has the company changed identity (sole proprietor to corporation; corporation to limited liability partnership; etc.)?
- Does the taxpayer have a written accounting procedures manual for use by employees?
- Does a numbered chart of accounts exist?
- Has the chart of accounts changed during the audit period?
- Does the taxpayer classify different outlets by location, product mix, or in other ways requiring stratification?
- Does the taxpayer have internal ratios or controls used for monitoring sales by product and outlet or for other management purposes?
- Is there an audit trail from computer records to the hardcopy source documents?

- Are numbers assigned to each customer or vendor?
- How are numbers assigned to source documents such as invoices, vouchers, checks, purchase orders, etc.? Do different organizational units (outlets, divisions, etc.) issue in the same sequence? Is one invoice sequence used during the audit period? Are there multiple invoice sequences throughout the audit period?
- How many copies of each source document are prepared?
- Does the taxpayer have a centralized purchasing system? If so, are purchases made in the name of divisions or subsidiaries? Are divisions or subsidiaries billed by journal entries?
- Does an audit trail exist from financial statements to trial balance to general or subsidiary ledgers to source documents?
- Have significant changes in accounting or record-keeping procedures occurred during the audit period?
- Has the company changed computer software or hardware systems?

### **Reporting**

- Is the taxpayer on the cash or accrual basis of accounting?
- Do the accounting procedures for financial, federal income tax, and state tax reporting differ?
- Have the financial statements been audited? If so, what type of opinion was rendered each year?
- How is the state tax return prepared?
- Has there been a significant change in the tax data reported by the taxpayer?
- Does the taxpayer have a Direct Payment Permit? When was it obtained?

### **Record Storage**

- Are the records computerized?
- For what period of time are computer records available?
- What source document information is reproduced in the computerized records?
- Do journals, invoice registers, accounts payable journals, voucher, or check registers, expense distributions, asset registers, depreciation schedules, or other summary records exist for all periods in the audit? What information is contained in each?
- Do customer and vendor lists exist for all periods?
- Do source documents exist for the entire audit period?
- What is the volume of source documents? This is a required entry in the audit plan. If exact information is not available, then a reliable estimate should be made.
- What is the disposition of each source document? Is it filed in numerical sequence, customer or vendor file, sent to another party, filed with another document?

This first step of gathering information is extremely important. Most information and answers to many of the questions above will be obtained from the audit questionnaire, contacting the taxpayer, and performing the entrance conference. However, the auditor can obtain other information by researching the Internet. Perhaps the company under audit has a Web site that will identify many of the products or services provided. Also, publicly held companies are required to file reports with the Securities and Exchange Commission, and this information may be contained on the company's Web site.

The more information that can be obtained upfront by the auditor will generally provide the design of a more efficient and effective sample. And, remember, without good internal controls or records, sampling should not be utilized.

## **Define the Population and Stratify into Various Sub-populations as Needed**

Numerous criteria exist to identify appropriate subpopulations (homogeneous groups) in a manner that will increase the accuracy of a sample. Some examples include the following:

- Outlets or locations
  1. Metro vs. rural
  2. Opened for the entire audit period vs. opened for only part of the audit period
  3. Mall store vs. free-standing store
- Divisions
- Departments
  1. Production vs. non-production departments
  2. Corporate office vs. sales branch
- Product lines
- Type of customer
  1. Reseller vs. end user
  2. Cash vs. credit
  3. Manufacturer
  4. Contractor
  5. Farmer
  6. Prices
  7. High dollar items vs. low dollar items
- Time periods
  1. Law changes
  2. Personnel or management changes
  3. Accounting changes
- General ledger accounts
  1. Expenses vs. assets
  2. Inventory vs. expense
- Accounting treatment
  1. Cash vs. accrual
  2. Taxable vs. non-Taxable
  3. Capitalized vs. expensed
  4. Tax accrued vs. tax paid
  5. Journal entry vs. detailed entry
  6. Computerized entry vs. manual entry

While it is important to properly identify subpopulations, it may or may not be feasible to sample them separately. Consideration must be given to the accounting system and record storage and whether or not population bases and source documents can be obtained in an efficient manner for each subpopulation. In deciding how to audit these subpopulations two main options exist:

1. Generate separate error schedules and bases for each subpopulation.
2. Include enough randomly selected units to ensure that each subpopulation is represented proportionately in one sample.

### **Example 1**

An equipment retailer has four revenue categories: sales, rentals, parts, and repair. Ideally each category should be audited separately because it represents a separate activity. Also, there are pricing and dollar value differences. If the taxpayer has separate revenue accounts and separate invoice sequences for each category or computerized records, the population may be easily stratified upfront. If the taxpayer has one invoice sequence for all categories and no computerized records, it may be more efficient to select one sample and ensure that all categories are represented proportionately.

**Example 2**

A manufacturer has several commingled expense accounts containing manufacturing and non-manufacturing items. While it would be advantageous to split the manufacturing and non-manufacturing items, it would be virtually impossible when both types of items are included in one account. However, the population may be stratified by time period for law changes. Whether this stratification is done before or after selection of the sampling units is auditor judgment. If done before selection of the sampling units, the auditor must keep in mind that each stratified period represents a separate sample and will require selecting the minimum number of sampling units for each period and developing the population and sample bases for each period. If only one sample is selected, the auditor should make every attempt to ensure that enough items are selected to represent proportionately each time period to be projected separately. The non-manufacturing items can be projected as usual, while the manufacturing items are projected separately by time period, as necessary.

Many factors may be present that would warrant further stratification of a subpopulation. The auditor should actively involve the taxpayer in the design of the populations to be sampled. The goal is to plan a sample that reflects the taxpayer's normal business operations.

**Compile Base Amounts**

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In addition to considering how to define or stratify the population, the auditor must determine the most appropriate population base. ALL potential population base information must be available to allow for projection alternatives. Having obtained all available sources of information, the auditor will have choices from which to select the most appropriate base.

**Sales**

For sales, the auditor may use either reported amounts from the taxpayer history or audited amounts from the taxpayer records such as federal income tax returns, financial statements, general ledgers, or sales journals.

**Gross Sales**

Generally, gross sales are the most appropriate population base because they are most verifiable. Gross sales may be verified by more than one source including federal income tax reports and audited financial statements. In addition, gross sales will contain all types of errors that may be identified in the population including non-taxed sales and local tax errors.

If using reported gross sales from the taxpayer history as a population base, the auditor must perform a reconciliation to ensure completeness. Comparing reported data to federal income tax returns, financial statements, general ledgers, sales journals, or bank statements should aid the auditor in determining completeness.

**Deductions**

Normally, deductions are not the most appropriate population base because they are less verifiable than gross sales and are limited in the types of errors that can be projected. Deductions on the history are computed by the state using the mainframe computer to subtract the taxpayer's reported taxable sales from reported gross sales. Obviously, if either reported gross sales or taxable sales are incorrect, the deductions will also be incorrect. At times, taxpayers will categorize sales on their books as taxable and non-taxable. Before totally relying on the non-taxable sales category as a population base, the auditor would need to verify the information.

Deductions as a population base should be used only on audited deductions (i.e., audited gross sales less audited taxable sales). If the only type of error noted in the sample relates to non-taxed sales not having a properly completed resale or exemption certificate, deductions as a population base may have merit. But, the auditor needs to carefully evaluate the results.

**Taxable Sales**

Generally, reported taxable sales are not the most appropriate population base because errors are not usually related to sales that were appropriately taxed. Also, like deductions, taxable sales are less verifiable. The only acceptable case in which reported taxable sales may be used as a population base is when the taxpayer has correctly addressed and reported the amounts subject to state tax but did not correctly charge local tax.

Example: Assume a taxpayer charged the appropriate amount of state and city tax throughout the entire audit period. However, in the middle of the audit period, a county tax became effective, but the taxpayer did not charge the county tax to customers. A one-line adjustment could be made to a sample exam for the county tax to project to the taxable sales for the applicable time period of when the county tax was effective.

See Local Tax Projection section of Chapter 9 for a detailed example.

**Purchases**

For purchases, the auditor will use external sources such as federal income tax returns, financial statements, general ledgers, or purchase journals to compile the population base. As always, the auditor should compare various sources such as income tax returns and audited financial statements to verify the integrity of amounts in general ledgers and purchase journals.

**Reminder:**

1. *Assets and expenses should be separated.*
2. *Taxed and non-taxed items should be separated whenever possible.*

**Taxable Purchases**

Reported taxable purchases from the taxpayer history as a population base would be limited. As with reported taxable sales, the only acceptable case would be when the taxpayer has correctly addressed and reported the amounts subject to tax but did not charge the correct local tax.

Example: Assume a taxpayer correctly accrued the appropriate amount of state and city tax on out-of-state purchases but had not accrued any MTA tax. A one-line adjustment could be made to a sample exam for the MTA tax to project to the reported taxable purchases for the MTA tax.

See Local Tax Projection section of Chapter 9 for detailed example.

**Establish correspondence**

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Correspondence must be established between the sampling units and the items to be examined. Correspondence can be naturally formed or auditor-made. However, auditors are encouraged to use natural correspondence.

**Natural Correspondence**

- Invoice numbers
- Voucher numbers
- Check numbers
- Purchase order numbers
- Batch numbers
- Pages
- Page number and line number
- Days
- Weeks
- Months

### Auditor-made correspondence

The auditor independently assigns a numbering sequence to the transactions. For example, the auditor could manually number the “items of interest” in a detailed general ledger or number the pages in a journal.

## Choose the Type of Sampling Unit and Determine the Sample Size

Audit Division has adopted the following hierarchy regarding the type and size of sampling units.

Sampling Unit	Recommended Sample Size	
<b>1. Transaction – Dollar Stratified</b>	Minimum of 100 items per stratum	
<b>2. Transaction – Manual</b>	Minimum of 250 “items of interest” (i.e., non-taxed Texas sales, or purchases charged to accounts with potential tax adjustments)	
<b>3. Cluster</b>	Minimum of 30 to 80 clusters approximating 250 “items of interest” for all clusters. Each cluster should be equal in size (units or dollars).	
<b>4. Time Period</b>	<i>Regular Time Period</i>	<i>Outlet Time Period *</i>
Days/Batches	Minimum of 30 for each outlet	Minimum of 80 for all combined outlets
Weeks	Minimum of 20 for each outlet	Minimum of 50 for all combined outlets
Months	Minimum of 6 for each outlet	Minimum of 30 – 80 for all combined outlets depending on the number of outlets

\* When a taxpayer has multiple outlets, it may be more efficient to perform an outlet time period sample rather than a regular time period sample. The auditor should choose the most appropriate sample unit & size based on the records available. If the outlets are different from each other in some way (non-taxed percentage, customer base, rural v. metro, accounting procedures, etc.), a regular time period sample would be an option. If the outlets are homogeneous where they can be combined, an outlet time period sample would be an option. See example below and Chapter 6 for additional information.

**Example: A taxpayer has 20 outlets. The auditor has 2 options: a regular time period or an outlet time period. The chart below shows the sample size the auditor would select depending on the type of sample unit deemed most appropriate.**

Regular Time Period	Outlet Time Period
<b>Days</b> A minimum of 600 days would be reviewed. The auditor would review 30 days for each of the 20 outlets (30 days X 20 outlets = 600 days)	<b>Outlet Days</b> A minimum of 80 outlet days would be reviewed.
<b>Weeks</b> A minimum of 400 weeks would be reviewed. The auditor would review 20 weeks for each of the 20 outlets (20 weeks X 20 outlets = 400 weeks)	<b>Outlet Weeks</b> A minimum of 50 outlet weeks would be reviewed.
<b>Months</b> A minimum of 120 months would be reviewed. The auditor would review 6 months for each of the 20 outlets (6 months X 20 outlets = 120 months)	<b>Outlet Months</b> A minimum of 30 – 80 outlet months would be reviewed.

Transaction is the preferred sampling unit because items will be more widely dispersed throughout the population, and, consequently, more representative. Transaction sampling is recommended when fewer than 1,000 items must be reviewed.

A cluster is a group of transactions and is recommended when more than 1,000 or more transactions must be examined. Cluster sampling is generally more representative than time period sampling because the clusters are more dispersed throughout the population and a uniform number of units are reviewed.

Time period sample units should only be considered after transactions and clusters have been eliminated as options. When time periods are selected, care should be taken to ensure that they are adequately dispersed throughout the audit period. All transactions occurring in the time periods selected must be examined.

Statistics have proven that a penalty is paid when fewer than 30 sampling units are used. Therefore, transaction and cluster sampling units should be used whenever possible. However, there will be audit situations where time period sampling is the only feasible option. The auditor should closely evaluate each alternative based on the hierarchy chart and remember that sample validity and cost effectiveness generally will be improved by choosing the smallest possible sample unit.

The type of sampling unit selected will determine the recommended minimum sample size. The samples sizes appearing in the chart are merely starting points. Each audit situation is different and may require the selection of more items than the suggested minimum. For example, a purchase sample normally consists of a commingled population of taxed and non-taxed items. If non-taxed items only comprise 25 percent of the population, the sample size may need to be expanded by 25 percent to review a sufficient number of items of interest.

## Select the Sample Units

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The three methods most frequently used for sample selection are random, systematic, and judgment.

### **Random Selection**

Random selection should be used whenever possible because it allows each item in the population an equal chance of being selected. This selection technique is the most defensible because it virtually eliminates personal bias or a pattern in the population from distorting the sample.

The auditor should remember that it is possible for a sample to be randomly selected but not be representative. Representativeness should always take precedence over randomness due to the statutory requirement that the sample must reflect as nearly as possible the normal conditions under which the business was operated during the audit period.

### **Systematic Selection**

Systematic selection might be used in situations where it is not feasible to use random selection because correspondence cannot be established in an efficient manner (e.g. invoices are not in any specific numeric order). Generally, the State's sampling software will allow for the use of line/page random sampling; therefore, the use of systematic selection will have limited use.

For a simple systematic selection, the total number of transactions in the population should be known or estimated. The minimum sample size is computed based on the formula discussed in Chapter 4. The interval between individual transactions must be calculated:

$$\text{Transactions in population} / \text{Minimum sample size} = \text{Interval}$$

The starting point should always be randomly selected from within the interval. The number "1" should be entered as the beginning invoice number. The interval size should be entered as the ending invoice number. One number should be selected. The interval is then added to the starting point for the second transaction to examine. The interval is successively added until the sample is complete.

The auditor should make sure that the systematic selection does not coincide with some pattern in the population (e.g. payroll checks are always made on Fridays). Multiple random starts can be used to avoid this. The auditor must increase the interval by the number of random starts; otherwise, the minimum sample size will be exceeded. For example, if the interval was originally calculated as 13, and the auditor decided to select 4 random starts, the interval would need to be increased to 52 (13 X 4).

**Example:**

6,400 transactions in the population = 12.8 ~ 13 as interval  
 500 items is minimum sample size

4 random starts: 13 X 4 = 52

Random starts selected between 1 and 52: **2, 14, 39, and 45**

Using a spreadsheet, the auditor can list the starting points and create a formula to add the interval until all sample items have been identified.

Page 1				Page 2				Page 3				Page 4			
2	14	39	45	2	14	39	45	2	14	39	45	2	14	39	45
2	14	39	45	1666	1678	1703	1709	3278	3290	3315	3321	4890	4902	4927	4933
54	66	91	97	1718	1730	1755	1761	3330	3342	3367	3373	4942	4954	4979	4985
106	118	143	149	1770	1782	1807	1813	3382	3394	3419	3425	4994	5006	5031	5037
158	170	195	201	1822	1834	1859	1865	3434	3446	3471	3477	5046	5058	5083	5089
210	222	247	253	1874	1886	1911	1917	3486	3498	3523	3529	5098	5110	5135	5141
262	274	299	305	1926	1938	1963	1969	3538	3550	3575	3581	5150	5162	5187	5193
314	326	351	357	1978	1990	2015	2021	3590	3602	3627	3633	5202	5214	5239	5245
366	378	403	409	2030	2042	2067	2073	3642	3654	3679	3685	5254	5266	5291	5297
418	430	455	461	2082	2094	2119	2125	3694	3706	3731	3737	5306	5318	5343	5349
470	482	507	513	2134	2146	2171	2177	3746	3758	3783	3789	5358	5370	5395	5401
522	534	559	565	2186	2198	2223	2229	3798	3810	3835	3841	5410	5422	5447	5453
574	586	611	617	2238	2250	2275	2281	3850	3862	3887	3893	5462	5474	5499	5505
626	638	663	669	2290	2302	2327	2333	3902	3914	3939	3945	5514	5526	5551	5557
678	690	715	721	2342	2354	2379	2385	3954	3966	3991	3997	5566	5578	5603	5609
730	742	767	773	2394	2406	2431	2437	4006	4018	4043	4049	5618	5630	5655	5661
782	794	819	825	2446	2458	2483	2489	4058	4070	4095	4101	5670	5682	5707	5713
834	846	871	877	2498	2510	2535	2541	4110	4122	4147	4153	5722	5734	5759	5765
886	898	923	929	2550	2562	2587	2593	4162	4174	4199	4205	5774	5786	5811	5817
938	950	975	981	2602	2614	2639	2645	4214	4226	4251	4257	5826	5838	5863	5869
990	1002	1027	1033	2654	2666	2691	2697	4266	4278	4303	4309	5878	5890	5915	5921
1042	1054	1079	1085	2706	2718	2743	2749	4318	4330	4355	4361	5930	5942	5967	5973
1094	1106	1131	1137	2758	2770	2795	2801	4370	4382	4407	4413	5982	5994	6019	6025
1146	1158	1183	1189	2810	2822	2847	2853	4422	4434	4459	4465	6034	6046	6071	6077
1198	1210	1235	1241	2862	2874	2899	2905	4474	4486	4511	4517	6086	6098	6123	6129
1250	1262	1287	1293	2914	2926	2951	2957	4526	4538	4563	4569	6138	6150	6175	6181
1302	1314	1339	1345	2966	2978	3003	3009	4578	4590	4615	4621	6190	6202	6227	6233
1354	1366	1391	1397	3018	3030	3055	3061	4630	4642	4667	4673	6242	6254	6279	6285
1406	1418	1443	1449	3070	3082	3107	3113	4682	4694	4719	4725	6294	6306	6331	6337
1458	1470	1495	1501	3122	3134	3159	3165	4734	4746	4771	4777	6346	6358	6383	6389
1510	1522	1547	1553	3174	3186	3211	3217	4786	4798	4823	4829	6398	10	35	41
1562	1574	1599	1605	3226	3238	3263	3269	4838	4850	4875	4881	50	62	87	93
1614	1626	1651	1657												

### Judgment Selection

Judgment selection should not be confused with the term judgmental sampling. Judgment selection refers to the process by which the auditor actually exercises his or her judgment in the selection of the sample items. Judgmental sampling is commonly referred to as non-statistical sampling. Selection by judgment alone should be avoided. Because the auditor could build in bias, it is very difficult to defend. However, in limited situations, this method may be the only option (e.g. incomplete records). The decision to use judgment selection should be made only with the understanding and approval of the group supervisor.

### Perform an Initial Evaluation

If possible, the auditor should attempt to evaluate all of the selected sample invoices in the short-test BEFORE pulling and examining source documents for tax compliance. This can be more difficult for transaction and cluster samples. If sales journals, purchase journals, or some other type of document is available listing individual transactions, the auditor should be able to quickly calculate the sample and population base averages and the variance. The variance is one indicator as to whether the sample selected is representative of the population. The variance should be 15 percent or less for manual samples and 8 percent or less for dollar stratified samples.

$$\text{Sample Base Average} = \frac{\$ \text{ Amount of Sample Base}}{\# \text{ of Sample Units}}$$

$$\text{Population Base Average} = \frac{\$ \text{ Amount of Population Base}}{\# \text{ of Units in Population}}$$

$$\text{Variance} = \frac{\text{Difference between sample base and population base averages}}{\text{Higher of sample base or population base average}}$$

OR

$$= 1 - \frac{\text{Lower of sample or population base average}}{\text{Higher of sample or population base average}}$$

The variance is calculated as absolute value.

### Perform a preliminary sample (short-test)

The preliminary sample, commonly referred to as the short-test, consists of reviewing the first 25 percent of the invoices selected from the minimum sample size. The items should be reviewed in the order selected so that items are reviewed throughout the audit period. This step is normally used for manual samples. In dollar-stratified samples so few items are sampled that it is important to review the entire selection.

### Evaluate the short-test and make a stop-or-go decision

Efficiency dictates that excessive hours not be spent in an unproductive manner. If no errors are found in the short-test, the sample examination should be abandoned. However, before deciding whether to abandon the sample, the auditor must be reasonably sure that the short-test results are representative of the population. Until the auditor evaluates the short-test by comparing the results to the population, there is no way of knowing whether the sample was representative and, consequently, whether finding no errors was a valid conclusion.

The following tests should be performed on the preliminary sample and documented in the audit plan regardless of whether errors are noted:

1. **Compare the average dollar value of all sample units to the average dollar value of the same type of units in the population.** Large differences in this comparison may indicate that the sample is not

proportional to the population or that the sample units were selected from a sub-population rather than the population that generated the summary amounts.

2. **Compute and compare the percentage of non-taxed sales/purchases charged to accounts of interest in the sample to the percentage of non-taxed sales/purchases charged to accounts of interest in the population.** If both of these percentages are computed on the dollar value of the transactions, a difference may indicate an incomplete population or dollar value/invoice mix problem that will need to be addressed by the auditor.

If errors are noted, perform the following additional tests and document in the audit plan:

3. **Compute the percentage of error by dividing all errors by the total of all items reviewed in the short-test (i.e., the sample base).** This percentage of error can be used to compute the potential value of the sample, if any, by projecting that error to the appropriate population total. The error rate will also be used to verify frequency in future tests should the auditor decide to continue the sample.
4. **Compare the average dollar value of all errors noted to each individual error.** This may help to identify particular classes of errors or items that appear to be extraordinary. Further stratification of the sample and/or projection procedures may be indicated.

These tests will allow the auditor to verify and document completeness of the population and modify the sampling procedure, if necessary, before additional time is spent in an unproductive manner.

The decision to continue the sample should be based on the materiality of any errors noted (percentage of error multiplied by the population base multiplied by the tax rate) and the estimated time required to complete the examination. The decision of how much is necessary to justify continuing is a decision the auditor and supervisor should make based on guidelines determined by division management.

$$\frac{\$ \text{Errors}}{\$ \text{ Sample Base}} = \text{Percentage of Error} \times \$ \text{ Population Base} \times \text{Tax Rate} = \text{Tax Due}$$

SAS 39 codified in AU 350.18 states “Evaluation in monetary terms of the results of a sample for a test of details contributes directly to the auditor’s purpose, since such an evaluation can be related to the auditor’s judgment of the monetary amount of misstatements that would be material for the test. When planning a sample for a test of details, the auditor should consider how much monetary misstatement in the related account balance or class of transactions may exist when combined with misstatements that may be found in other tests without causing the financial statements to be materially misstated. This maximum monetary misstatement that the auditor is willing to accept for the balance or class is called tolerable misstatement for the sample. Tolerable misstatement is a planning concept and is related to the auditor’s determination of materiality for planning the financial statement audit in such a way that tolerable misstatement, combined for all of the tests in the entire audit, does not exceed materiality for the financial statements. This means that auditors should normally set tolerable misstatement for a specific audit procedure at less than financial statement materiality so that when the results of the audit procedures are aggregated, the required overall assurance is attained.”

## Complete the sample

If sufficient material errors have been noted in the short-test to justify completing the sample, the auditor should issue the sampling notification. During the examination of the remaining 75 percent of the sample, the auditor should periodically review the sample results. Calculating the error rate, analyzing the type of exceptions noted, and reviewing the average dollar amount of errors and bases will alert the auditor to any changes that may be necessary to the sample such as refinement of the population or sub-population and increased sample size.

## Project the results to the population

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The dollar value of the errors divided by the dollar value of the sample base will equal the error percentage. The error percentage multiplied by the dollar value of the population base will equal the amount subject to tax.

$$\frac{\$ \text{Errors}}{\$ \text{Sample Base}} \times \$ \text{Population Base} = \$ \text{Amount Subject to Tax}$$

## Evaluate the sample

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A final evaluation should be performed on the sample to verify that the variance is still within 15 percent for manual samples or 8 percent for dollar-stratified samples. Additionally, the auditor should evaluate whether stratifying the population or using alternative projection bases is appropriate.

## Chapter 3

# Transaction Sample – Dollar Stratified

Increasingly, taxpayers are using computers in day-to-day business operations out of necessity rather than convenience. Usually, dollar stratified sampling techniques will be the most efficient method because a relatively small sample (fewer items) can be chosen to represent a high percentage of the dollars in the population. Also, sub-populations will be easier to define, and samples will be more representative. Once an auditor determines the use of computerized data is the most effective sampling method, every attempt should be made to obtain the data.

Populations (groups) generally consist of many low-dollar items and few high-dollar items. Separating or stratifying these populations into dollar ranges (strata) reduces the wide dispersion and, consequently, reduces the required sample size. Audit Division currently uses two main programs for dollar stratified random sampling:

1. CAMS-TSO (Computer Audit Menu System-Time Share Option)
2. CAMS-PC (Computer Audit Menu System-Personal Computer)

CAMS-TSO is commonly referred to as mainframe CAMS. When extremely large data files are received, mainframe CAMS is an option. The auditor will send the computer data to a Computer Audit Specialist (CAS) in headquarters and have the data copied to the mainframe for use by the auditor through a menu-driven system. Smaller computer files may lend themselves to CAMS-PC. All taxpayer data is copied to the auditor's PC and requires minimal, if any, assistance from a CAS.

The auditor should be mindful that performing CAMS audits requires much more time upfront than other sampling methods. The auditor is responsible for obtaining the computer data from the taxpayer and verifying that the correct data was received. In the initial stages of a mainframe CAMS application, the auditor will request from the CAS several reports including a control total reconciliation report to tie amounts per the computer data to a hard copy summary report such as the general ledger to verify that complete information was obtained on the computer file. Summary reports should be requested for every field in the computer file that will be used to define the population. In addition, a detailed test transaction report should be requested to verify that enough information is available on the computer file to allow the auditor to locate the source documents. After the auditor has requested these reports from the CAS to verify the integrity of the computer file, the auditor will ask the CAS to convert the file and load it onto the mainframe. At this point, the auditor will be responsible for running reports, defining the population, and selecting the sample.

Both programs involve stratifying various populations (groups) by dollar amounts and selecting samples from each stratum. The auditor has two options for stratifying the dollars in each group:

1. Absolute value
2. Actual value

The selection of absolute value will temporarily change negative amounts to positive amounts for categorizing into the appropriate stratum; once the stratum is created, the amount will be the net effect of positive

and negative amounts. The selection of actual value will create strata that are either all positive amounts or all negative amounts.

Deciding whether to use absolute or actual value will depend largely on what type of computer file is received from the taxpayer. For example, an accounts payable file may be stratified easily by absolute value whereas a general ledger file may contain several reversing journal entries requiring the use of actual value.

The auditor's ability to divide the computer data into homogeneous populations will be affected by the types of fields contained in the file. **Assets should be separated from expenses and, whenever possible, taxable items should be separated from non-taxable items.** Refer to the section on defining and stratifying the population for additional information.

In addition, the auditor should have a general understanding on the difference between AND/OR statements.

**Example:**

Account #	Date	# of transactions
500	0012	10,000
600	0012	5,000
700	0101	7,500

If Account# = 500 AND Date = 0012, the result would be 10,000 transactions.

If Account# = 500 OR Date = 0012, the result would be 15,000 transactions.

If Account# = 700 AND Date = 0012, the result would be 0 transactions.

If Account# = 600 OR Date = 0101, the result would be 12,500 transactions.

**Minimum Sample Size = 100 items per stratum**

**Important Reminders Regarding Sample Size**

1. 100 items per stratum is a starting point. If additional items are deemed necessary, the sample size should be increased by increments of 25 items.
2. Two or more sampled strata are required per group to qualify as a dollar-stratified sample.
3. One sampled stratum per group will require a minimum of 250 items (1 sampled stratum and 1 detailed stratum per group is not considered dollar stratified sampling). Example: A group is divided into two strata. One range from \$0-\$10,000 is sampled, and all items over \$10,000 are detailed; a minimum of 250 items is required for the \$0-\$10,000 range.
4. The minimum of 100 items is based on a highly stratified population (e.g., taxed vs. non-taxed). If the population cannot be highly stratified, additional sampling risk is incurred, and, consequently, the sample size should be increased. Increase the sample size and analyze the results to determine whether enough non-taxed items have been reviewed or the sample must be expanded.

**Evaluate the sample BEFORE pulling and examining any source documents!!!**

With CAMS, a sample evaluation report automatically generates after selection of the sample items. This report will contain all of the necessary information for the auditor to make an informed decision as to whether a representative sample has been selected from the population. The critical component of this report is the variance calculation. Each variance calculation for each stratum for each group should evaluate within 8 percent when using dollar stratified sampling. Also, the auditor should ensure that the variance calculations within each group are substantially similar. After the auditor has determined that the sample evaluates and issues the sampling notification, the review of the source documents may begin.

**Example 1**

<u>Stratum</u>	<u>Variance</u>
A	4%
B	6%
C	7%

All of the above strata are substantially similar and are acceptable.

**Example 2**

<u>Stratum</u>	<u>Variance</u>
A	.01%
B	6%
C	7%

Stratum A's variance is significantly lower than the other two strata. Therefore, the auditor may need to adjust the dollar range of Stratum A up or down. Consequently, strata B and C will most likely need the dollar ranges adjusted, and/or a new stratum may need to be created. Every situation is different and will require auditor judgment to determine the most appropriate action.

**Reminder:** *To be considered dollar stratified sampling, a group must contain at least 2 sampled strata and 1 detailed stratum.*

Generally, a preliminary sample (25 percent short-test) is not performed for each stratum due to the minimal number of items required when performing computer-assisted sampling.

## Contested CAMS Sample Sizes

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When a taxpayer challenges the sample size generated by a CAMS audit, the following three options are available. These options are discussed in STAR accession number 9904337L.

**Option 1:**

At the inception of an audit, the taxpayer or their representative may request that certain accounts where they feel they may have paid or accrued sales tax in error be formed into a separate audit group. This group would be made up of accounts not already selected as an account of interest and included in the sample groups utilized by the state. Our auditor will select separate samples for the taxpayer/representative to use in order to verify any tax that may have been paid in error. We will use the same stratification procedures and sampling procedures that we use on any samples completed by the State. Larger samples in this group may be requested by the taxpayer/representative since they will be performing most of the audit fieldwork. The State's auditor will verify the information presented by the taxpayer/representative and project the sample results, if necessary, in the audit. Our auditor would also project any additional tax that may be identified in these samples. This option is costly and will not be available after our samples have been selected and processed to the pull list level of completion.

**Option 2:**

The audit population can be stratified between the tax accrued portion of the population and the balance of the audit population if an identifying flag is contained in the data file. The identifying flag may be in the original data file or it may be developed by various procedures utilized by our computer specialists. The procedures to be utilized in this option are outlined in AM1762 dated

February 22, 1996. The utilization of this option will increase the number of audit groups and stratification layers utilized to verify the audit population. This option also increases the overall number of samples units selected from the population.

**Option 3:**

This option applies to all audits completed by the State that utilized the Computer Audit Menu System, including options 1 and 2 listed above. When we conduct a computer-assisted audit a randomly generated number is assigned to each transaction in the population. Once the data is sorted into audit groups and strata layers our samples are selected based on those random numbers. This information is available to taxpayers and their representatives following the guidelines outlined in AD12 dated May 6, 1998. With this data in hand the taxpayer/representative may expand the sample sizes utilized by our auditor using the next available random numbers assigned in each strata layer. Samples expanded in this manner that identify materially different error rates will be considered by the State provided the following guidelines are followed.

1. The expanded sample should be an exact multiple of the sample size selected and utilized by the State. (I.e., our sample size was 175; expansion would need to be 350, 525, etc.) We would not allow the sample to only be expanded until a lower error rate is derived.
2. The sample units selected must be the next available units as identified by the random numbers assigned by the State at the time the population file was coded by the State.
3. Both additional taxable items as well as non-taxable items will be considered when the determination of material changes in the error rate is considered.
4. The expanded sample must continue to evaluate within the guidelines utilized by Audit division.
5. The State will reserve the right to expand all other strata layers in the same group by a similar multiple of the sample size to verify if similar problems exist in other strata layers within the same group.
6. The taxpayer/representative would be expected to provide the additional records necessary for this verification in a timely manner to have this option considered.

The procedures listed in Options 1-3 are not available on manual samples that are selected at the individual auditor computer level.

## Chapter 4

## Transaction Sampling – Manual

Transaction sampling is recommended when the computed minimum sample size is less than 1,000 transactions.

A numerical correspondence must be available in order to randomly select individual transactions. It is not necessary that the numerical correspondence be sequential. Transaction sampling can be utilized by using invoice numbers, check numbers, batch numbers, page/line numbers etc.

**Step 1 – Determine the minimum sample size**

The following calculation determines the minimum sample size for reviewing the recommended 250 items of interest:

$$\frac{250 \text{ Items of Interest}}{\% \text{ of items of interest in population}} = \text{Minimum Sample Size}$$

“250” is not a magic number. It is merely a starting point. A sample with less than 250 items of interest could be valid also. The main goal is that the sample is representative of the population.

Items of interest include non-taxed Texas sales or purchases charged to accounts with potential tax. The items of interest percentage will either be readily available or require computation.

- Percentage of reported deductions from the taxpayer history
  1. A Texas company reports 75 percent deductions (non-taxed sales).  
 $250 / .75 = 333.33 \sim 334$  minimum sample size
  2. A company with locations in Texas and New Mexico reports 60 percent deductions (non-taxed sales); gross sales include Texas and New Mexico sales, and there is only one invoice sequence for all locations. The percentage of Texas sales is 80 percent per financial statements.  
 $250 / .60 = 416.67 \sim 417$   
 $417 / .80 = 521.25 \sim 522$  minimum sample size
- A detailed customized printout of Texas non-taxed sales for the audit period (i.e., 100 percent items of interest in the population)
- A detailed customized printout of purchase accounts of interest for the audit period (i.e., 100 percent items of interest in the population)
- The taxpayer only reports taxable sales. After verifying that reported taxable sales are correct, the auditor would subtract them from gross sales on the federal income tax returns or financial statements to derive audited deductions. The audited deduction amount is divided by the gross sales amount to calculate the percentage of non-taxed sales in the population.

Total gross sales per federal income tax returns for the audit period	\$1,000,000
Less: Reported Taxable Sales for the audit period	<u>400,000</u>
Equals Audited Deductions	600,000

$\$600,000 / \$1,000,000 = 60\%$  (items of interest in the population)

$250 / .60 = 416.67 \sim 417$  minimum sample size

- A taxpayer maintains a manual purchase journal and records all check numbers in sequential order.

Account Numbers	Account Description	Total Purchases Audit Period	Accounts of Interest	Comments
120	Equipment	\$ 200,000	\$ –	Detail
130	Inventory	500,000	–	
401	Salaries	–	–	Diff. Ck sequence
501	Eqpt. Rentals	18,000	18,000	
502	Utilities	50,000	50,000	
503	Professional Fees	20,000	–	
504	Small Tools	35,000	35,000	
505	Operating Supplies	150,000	150,000	
506	Repairs	60,000	60,000	
507	Miscellaneous	25,000	25,000	
<b>Total</b>		<b>1,058,000</b>	<b>338,000</b>	

$$\frac{\$338,000}{\$1,058,000} = 31.95\% \text{ (percentage of items of interest in the population)}$$

$$\frac{250}{31.95\%} = 782.47 \text{ rounded to } 783 \text{ for minimum sample size}$$

783 transactions is the minimum sample size to examine 250 items of interest.

**Step 2 – Select the sample units**

Normally, random selection will be used. The State’s sampling software has two different sample unit options from which to choose—transaction or transaction – line page. The transaction option would be used when a consecutive numerical sequence is available; it allows for the entry of multiple numerical sequences. The transaction – line page option would be used most commonly when a consecutive numerical sequence is not available, but, for example, a journal exists containing pages & lines of data.

Example – Transactions: Assume a taxpayer had 2 separate numerical invoice sequences for the audit period. By selecting Transaction as the sample unit and entering each sequence, the auditor will generate a sample items report identifying the selected invoice. For illustrative purposes, only 10 items were selected.

Sample Items Report for Transaction Sample Example				
Audit Period : 1/1/2004 - 12/31/2007				
Seed : 159043694		Total Items Requested : 10		
Series	Reference	Begin	End	Range
1	Reference 1	10001	50000	40000
2	Reference 2	100000	138592	38593
				Totals : 78593

**Sample Items Report for Transaction Sample Example**

Audit Period : 1/1/2004 - 12/31/2007

Seed : 159043684 Total Items Requested : 10

Request	Selection Order	Reference	Item Number	Correlative
1	5	Reference 1	10312	312
1	3	Reference 1	23522	13522
1	9	Reference 1	33244	23244
1	7	Reference 1	37562	27562
1	10	Reference 1	39078	29078
1	4	Reference 1	39609	29609
1	2	Reference 2	107273	47274
1	6	Reference 2	108701	48702
1	1	Reference 2	118491	58492
1	8	Reference 2	130608	70609

**Example – Transaction-Line Page:** Assume that a taxpayer has monthly journals. Each monthly journal contains 50 pages and 60 lines per page. By selecting Transaction – Line Page as the sample unit and entering each month as a reference and the number of pages and lines, the auditor will generate a sample items report containing the month, page, and line. For illustrative purposes, the following printouts only contain a portion of months in the audit period.

**Sample Items Report for Transaction Line Page Example**

Audit Period : 1/1/2004 - 12/31/2007

Seed : 659170963 Total Items Requested : 10

Series	Reference	Pages	Lines Per Page	Range
1	0501	50	60	3000
2	0502	50	60	3000
3	0503	50	60	3000
4	0504	50	60	3000
5	0505	50	60	3000
6	0506	50	60	3000

Totals : 18000

**Sample Items Report for Transaction Line Page Example**

Audit Period : 1/1/2004 - 12/31/2007

Seed : 659170963 Total Items Requested : 10

Request	Selection Order	Reference	Item Page	ItemLine	Correlative
1	4	0501	35	53	2093
1	9	0502	13	39	3759
1	7	0502	21	8	4208
1	10	0503	3	32	6152
1	3	0503	9	10	6490
1	6	0503	15	53	6893
1	1	0503	47	9	8789
1	8	0504	3	16	9136
1	2	0504	31	27	10827
1	5	0506	16	52	15952

**Step 3 – Perform an initial evaluation**

If possible, the auditor should attempt to evaluate all of the selected sample invoices in the short-test BEFORE pulling and examining source documents for tax compliance. If sales journals, purchase journals, or some other type of document is available listing individual transactions, the auditor should be able to quickly calculate the sample and population base averages and the variance. The variance is one indicator as to whether the sample selected is representative of the population. The variance should be within 15 percent for a manual sample.

Sample Base Average =  $\frac{\$ \text{ Amount of Sample Base}}{\# \text{ of transactions in Sample}}$

Population Base Average =  $\frac{\$ \text{ Amount of Population Base}}{\# \text{ of transactions in Population}}$

Variance =  $\frac{\text{Difference between sample and population base averages}}{\text{Higher of sample or population base average}}$

OR

=  $1 - \frac{\text{Lower of sample or population base average}}{\text{Higher of sample or population base average}}$

Example: Assume that 75 items are selected for the short-test for a sales sample. Using the sales journal, the auditor compiles the sample base amounts and compares to the population base to verify that the variance is within 15 percent.

	Sample Base Short-Test	Population Base
Dollars	\$2,666.00	\$1000,000.00
Units	75	2,750
Average	\$35.55	\$36.36
Variance	= $\frac{36.36 - 35.55}{36.36}$	
	OR	
	= $1 - 35.55/36.36$	
	= 2.23%	

**Step 4 – Perform a preliminary sample (short-test)**

The preliminary sample, commonly referred to as the short-test, consists of reviewing the first 25 percent of the invoices selected from the minimum sample size computed in Step 1. The items should be reviewed in the order selected so that items are reviewed throughout the audit period. For example, if the minimum sample size computed in Step 1 is 300, the first 75 invoices selected of the 300 should be reviewed.

**Step 5 – Evaluate the short-test and make a stop-or-go decision**

Efficiency dictates that excessive hours not be spent in an unproductive manner. If no errors are found in the short-test, the sample examination should be abandoned. However, before deciding whether to abandon the sample, the auditor must be reasonably sure that the short-test results are representative of the population. Until the auditor evaluates the short-test by comparing the results to the population, there is no way of knowing whether the sample was representative and, consequently, whether finding no errors was a valid conclusion.

The following tests should be performed on the preliminary sample and documented in the audit plan regardless of whether errors are noted:

1. **Compare the average dollar value of all sample units to the average dollar value of the same type of units in the population.** Large differences in this comparison may indicate that the sample is not proportional to the population or that the sample units were selected from a sub-population rather than the population that generated the summary amounts.
2. **Compute and compare the percentage of non-taxed sales/purchases charged to accounts of interest in the sample to the percentage of non-taxed sales/purchases charged to accounts of interest in the population.** If both of these percentages are computed on the dollar value of the transactions, a difference may indicate an incomplete population or dollar value/invoice mix problem that will need to be addressed by the auditor.

If errors are noted, perform the following additional tests and document in the audit plan:

3. **Compute the percentage of error by dividing all errors by the total of all items reviewed in the short-test (i.e., the sample base).** This percentage of error can be used to compute the potential value of the sample, if any, by projecting that error to the appropriate population total. The error rate will also be used to verify frequency in future tests should the auditor decide to continue the sample.
4. **Compare the average dollar value of all errors noted to each individual error.** This may help to identify particular classes of errors or items that appear to be extraordinary. Further stratification of the sample and/or projection procedures may be indicated.

These tests will allow the auditor to verify and document completeness of the population and modify the sampling procedure, if necessary, before additional time is spent in an unproductive manner.

The decision to continue the sample should be based on the materiality of any errors noted (percentage of error multiplied by the population base multiplied by the tax rate) and the estimated time required to complete the examination. The decision of how much is necessary to justify continuing is a decision the auditor and supervisor should make based on guidelines determined by division management.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} = \text{Percentage of Error} \times \$ \text{ Population Base} \times \text{Tax Rate} = \text{Tax Due}$$

### **Step 6 – Complete the sample**

If sufficient material errors have been noted in the short-test to justify completing the sample, the auditor should issue the sampling notification. During the examination of the remaining 75 percent of the sample, the auditor should periodically review the sample results. Calculating the error rate, analyzing the type of exceptions noted, and reviewing the average dollar amount of errors and bases will alert the auditor to any changes that may be necessary to the sample such as refinement of the population or sub-population and increased sample size.

### **Step 7 – Project the results to the population**

The dollar value of the errors divided by the dollar value of the sample base will equal the error percentage. The error percentage multiplied by the dollar value of the population base will equal the amount subject to tax.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} \times \$ \text{ Population Base} = \$ \text{ Amount Subject to Tax}$$

### **Step 8 – Evaluate the sample**

See evaluation and analysis chapter for additional information.

## Chapter 5

# Cluster Sampling

Under most circumstances, transaction sampling loses its effectiveness when more than 1,000 transactions must be located and examined. Therefore, cluster sampling should be used for samples larger than 1,000 transactions. While it may take more time to plan a cluster sample, the time to actually locate the sample items is greatly reduced. For example, a transaction sample of 1,000 transactions requires identifying 1,000 physical locations whereas a sample of 40 clusters of 25 items only requires identifying 40 locations.

Cluster samples consist of blocks of contiguous items within a population. Each cluster selected should be of even size because statistical evaluations of samples have proven that an additional penalty is paid for sample units that are uneven in size. The sample should not be less than 30 clusters for statistical evaluation reasons or more than 80 clusters for efficiency reasons. Clear documentation is a must with all forms of cluster samples. It is imperative to note the starting point of each cluster and the invoices included within each cluster.

### **Step 1 – Determine the minimum sample size**

The following calculation determines the minimum sample size for reviewing the recommended 250 items of interest:

$$\frac{250 \text{ Items of Interest}}{\% \text{ of items of interest in population}} = \text{Minimum Sample Size}$$

See the Transaction Sampling – Manual chapter if additional explanation is needed about items of interest and percent of items of interest.

### **Step 2 – Determine the minimum number of clusters**

$$\frac{\% \text{ of items of interest}}{25\%} \times 50 + 30 = \text{Minimum \# of clusters}$$

### **Step 3 – Determine the minimum number of items in each cluster**

$$\frac{\text{Minimum Sample Size (per Step 1)}}{\text{Minimum \# of clusters (per Step 2)}} = \text{Minimum \# of items in each cluster}$$

### **Step 4 – Determine the number of clusters in the population**

$$\frac{\text{Total \# of transactions}}{\text{Minimum \# of items in each clusters (per Step 3)}} = \text{\# of clusters in the population}$$

**Rounding**

When manually calculating Steps 1 through 4, any fraction, whether .01 or .99, is rounded to the next whole number so that the invoices contained in the fraction of a cluster are included in the selection. For example, in Step 2, if calculating the number of clusters results in 52.2, it should be rounded to the next highest number of 53 clusters.

**Step 5 – Select the sample units**

Several options exist for randomly selecting clusters utilizing the State’s sampling software, and each depends on whether there is a consecutive numerical sequence.

1. When there is a consecutive numerical sequence, the auditor may select clusters as the sample unit. After the auditor enters each numerical range, the program will automatically divide the population into clusters, list the cluster number, and each invoice within the cluster.

Example: A taxpayer has 2 invoice ranges during the audit period consisting of 4560 – 9232 and 100001 – 18073. If a short test of 17 clusters was selected (only 2 clusters are shown in their entirety), the State’s sampling software would generate the following sample items reports:

Sample Items Report for Cluster Sample Example				
Audit Period : 1/1/2004 - 12/31/2007				
Seed : 68774058		Total Items Requested : 17		
Series	Reference	Begin	End	Range
1	Reference 1	4560	9232	4673
2	Reference 2	100001	18073	8073
				Totals : 12746

Audit Period : 1/1/2004 - 12/31/2007						
Seed : 68774058		Total Items Requested : 17				
Request	Selection Order	Reference	Cluster Number	Cluster Count	Item Number	Correlative
1	14	Reference 1	24	1	4974	415
1	14	Reference 1	24	2	4975	416
1	14	Reference 1	24	3	4976	417
1	14	Reference 1	24	4	4977	418
1	14	Reference 1	24	5	4978	419
1	14	Reference 1	24	6	4979	420
1	14	Reference 1	24	7	4980	421
1	14	Reference 1	24	8	4981	422
1	14	Reference 1	24	9	4982	423
1	14	Reference 1	24	10	4983	424
1	14	Reference 1	24	11	4984	425
1	14	Reference 1	24	12	4985	426
1	14	Reference 1	24	13	4986	427

1	14	Reference 1	24	14	4987	428
1	14	Reference 1	24	15	4988	429
1	14	Reference 1	24	16	4989	430
1	14	Reference 1	24	17	4990	431
1	14	Reference 1	24	18	4991	432
1	17	Reference 1	34	1	5154	595
1	17	Reference 1	34	2	5155	596
1	17	Reference 1	34	3	5156	597
1	17	Reference 1	34	4	5157	598
1	17	Reference 1	34	5	5158	599
1	17	Reference 1	34	6	5159	600
1	17	Reference 1	34	7	5160	601
1	17	Reference 1	34	8	5161	602
1	17	Reference 1	34	9	5162	603
1	17	Reference 1	34	10	5163	604
1	17	Reference 1	34	11	5164	605
1	17	Reference 1	34	12	5165	606
1	17	Reference 1	34	13	5166	607
1	17	Reference 1	34	14	5167	608
1	17	Reference 1	34	15	5168	609
1	17	Reference 1	34	16	5169	610
1	17	Reference 1	34	17	5170	611
1	17	Reference 1	34	18	5171	612
1	5	Reference 1	67	1	5748	1189
1	5	Reference 1	67	2	5749	1190
1	5	Reference 1	67	3	5750	1191

- When there is a consecutive numerical sequence, the auditor may select transactions as the sample unit and convert them to clusters.

Example: A taxpayer maintains sales invoices on microfiche pages beginning with page 10232 and ending with page 20347 for the audit period. Each microfiche page consists of 50 items. After performing Steps 1 through 4, the auditor has decided to divide each microfiche page into 2 groups, or clusters, of 25 items each. The auditor enters the reference as 1 to designate the first 25 items of the microfiche page and enters the range of microfiche page numbers. The auditor enters a 2 to designate the last 25 items of the microfiche page and enters the same range of microfiche page numbers as in reference 1.

Sample Items Report for Transaction used for Cluster Example				
Audit Period : 1/1/2004 - 12/31/2007				
Seed : 716180070		Total Items Requested : 10		
Series	Reference	Begin	End	Range
1	Reference 1	10232	20347	10116
2	Reference 2	10232	20347	10116
				Totals : 20232

**Sample Items Report for Transaction used for Cluster Example**

Audit Period : 1/1/2004 - 12/31/2007

Seed : 716180070 Total Items Requested : 10

Request	Selection Order	Reference	Item Number	Correlative
1	3	Reference 1	14518	4287
1	8	Reference 1	17059	6828
1	2	Reference 1	17499	7268
1	1	Reference 2	11955	11840
1	4	Reference 2	13270	13155
1	9	Reference 2	16403	16288
1	5	Reference 2	16408	16283
1	6	Reference 2	17963	17848
1	10	Reference 2	18341	18226
1	7	Reference 2	18632	18517

The auditor would locate microfiche page 17499 and re-view the first 25 invoices.

The auditor would locate microfiche page 18341 and re-view the bottom half of the page consisting of 25 invoices.

- When there is not a consecutive numerical sequence, the auditor may select cluster line-page as the sample unit. For example, if a taxpayer has yearly purchase journals, the auditor could enter each year as a reference and enter the number of pages and lines per page for each journal. The State's sampling software would randomly select each cluster and list the invoices within each cluster.

**Sample Items Report for Cluster Line-Page Example 1**

Audit Period : 1/1/2004 - 12/31/2007

Seed : 989883070 Total Items Requested : 19

Series	Reference	Pages	Lines Per Page	Range
1	2004	125	45	5825
2	2005	132	45	5940
3	2006	136	50	6800
4	2007	145	50	7250
				Totals : 25615

Sample Items Report for Cluster Line-Page Example 1									
Audit Period : 1/1/2004 - 12/31/2007									
Seed : 989883070									
Total Items Requested : 19									
Request	Selection Order	Reference	Cluster Number	Cluster Count	Item	Page	Item Line	Correlative	
1	5	2004	2	1		1	15	15	
1	5	2004	2	2		1	16	16	
1	5	2004	2	3		1	17	17	
1	5	2004	2	4		1	18	18	
1	5	2004	2	5		1	19	19	
1	5	2004	2	6		1	20	20	
1	5	2004	2	7		1	21	21	
1	5	2004	2	8		1	22	22	
1	5	2004	2	9		1	23	23	
1	5	2004	2	10		1	24	24	
1	5	2004	2	11		1	25	25	
1	5	2004	2	12		1	26	26	
1	5	2004	2	13		1	27	27	
1	5	2004	2	14		1	28	28	
1	10	2004	221	1		69	21	3081	
1	10	2004	221	2		69	22	3082	
1	10	2004	221	3		69	23	3083	
1	10	2004	221	4		69	24	3084	
1	10	2004	221	5		69	25	3085	
1	10	2004	221	6		69	26	3086	
1	10	2004	221	7		69	27	3087	

**Step 6 – Perform an initial evaluation**

If possible, the auditor should attempt to evaluate all of the selected clusters in the short-test BEFORE pulling and examining source documents for tax compliance. If sales journals, purchase journals, or some other type of document is available listing individual transactions, the auditor should be able to quickly calculate the sample and population base averages and the variance. The variance is one indicator as to whether the sample selected is representative of the population. The variance should be within 15 percent for a manual sample.

Sample Base Average =  $\frac{\$ \text{ Amount of Sample Base}}{\# \text{ of clusters in Sample}}$

Population Base Average =  $\frac{\$ \text{ Amount of Population Base}}{\# \text{ of clusters in Population}}$

Variance =  $\frac{\text{Difference between sample and population base averages}}{\text{Higher of sample or population base average}}$

OR

=  $1 - \frac{\text{Lower of sample or population base average}}{\text{Higher of sample or population base average}}$

**Step 7 – Perform a preliminary sample**

The preliminary sample, commonly referred to as the short-test, consists of reviewing the first 25 percent of the clusters selected from the minimum number of clusters computed in Step 2. The items should be reviewed in the order selected so that items are reviewed throughout the audit period. For example, if the minimum number of clusters computed in Step 2 is 60, the first 15 clusters selected of the 60 should be reviewed.

### Step 8 – Evaluate the short-test and make a stop-or-go decision

Efficiency dictates that excessive hours not be spent in an unproductive manner. If no errors are found in the short-test, the sample examination should be abandoned. However, before deciding whether to abandon the sample, the auditor must be reasonably sure that the short-test results are representative of the population. Until the auditor evaluates the short-test by comparing the results to the population, there is no way of knowing whether the sample was representative and, consequently, whether finding no errors was a valid conclusion.

The following tests should be performed on the preliminary sample and documented in the audit plan regardless of whether errors are noted:

1. **Compare the average dollar value of all sample units to the average dollar value of the same type of units in the population.** Large differences in this comparison may indicate that the sample is not proportional to the population or that the sample units were selected from a sub-population rather than the population that generated the summary amounts.
2. **Compute and compare the percentage of non-taxed sales/purchases charged to accounts of interest in the sample to the percentage of non-taxed sales/purchases charged to accounts of interest in the population.** If both of these percentages are computed on the dollar value of the transactions, a difference may indicate an incomplete population or dollar value/invoice mix problem that will need to be addressed by the auditor.

If errors are noted, perform the following additional tests and document in the audit plan:

3. **Compute the percentage of error by dividing all errors by the total of all items reviewed in the short-test (i.e., the sample base).** This percentage of error can be used to compute the potential value of the sample, if any, by projecting that error to the appropriate population total. The error rate will also be used to verify frequency in future tests should the auditor decide to continue the sample.
4. **Compare the average dollar value of all errors noted to each individual error.** This may help to identify particular classes of errors or items that appear to be extraordinary. Further stratification of the sample and/or projection procedures may be indicated.

These tests will allow the auditor to verify and document completeness of the population and modify the sampling procedure, if necessary, before additional time is spent in an unproductive manner.

The decision to continue the sample should be based on the materiality of any errors noted (percentage of error multiplied by the population base multiplied by the tax rate) and the estimated time required to complete the examination. The decision of how much is necessary to justify continuing is a decision the auditor and supervisor should make based on guidelines determined by division management.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} = \text{Percentage of Error} \times \$ \text{ Population Base} \times \text{Tax Rate} = \text{Tax Due}$$

### Step 9 – Complete the sample

If sufficient material errors have been noted in the short-test to justify completing the sample, the auditor should issue the sampling notification. During the examination of the remaining 75 percent of the sample, the auditor should periodically review the sample results. Calculating the error rate, analyzing the type of exceptions noted, and reviewing the average dollar amount of errors and bases will alert the auditor to any changes that may be necessary to the sample such as refinement of the population or sub-population and increased sample size.

**Step 10 – Project the results to the population**

The dollar value of the errors divided by the dollar value of the sample base will equal the error percentage. The error percentage multiplied by the dollar value of the population base will equal the amount subject to tax.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} \times \$ \text{ Population Base} = \$ \text{ Amount Subject to Tax}$$

**Step 11 – Evaluate the sample**

See evaluation and analysis chapter for additional information.

**Special Situation****Uneven clusters**

As mentioned earlier, a statistical penalty is paid when sample units are uneven in size. Two common problems consist of the following:

1. The last cluster of an invoice range is selected in the sample but does not contain the minimum number of items.
2. A transaction within a cluster selected in the sample is extraordinary.

Problem	Solution
With one invoice range, the last cluster of the population is selected as a sample unit and is uneven.	<ol style="list-style-type: none"> <li>1. Replace the uneven cluster with the next randomly selected cluster. Detail the replaced uneven cluster.</li> <li>2. Complete the uneven cluster by selecting the next available invoice from the next available cluster.</li> </ol>
Extraordinary transaction is within a cluster.	<ol style="list-style-type: none"> <li>1. Replace the extraordinary item with the next available transaction. Detail the extraordinary item.</li> <li>2. Replace the cluster containing the extraordinary item with the next randomly selected cluster. Detail the replaced cluster.</li> </ol>

When identical situations, like those mentioned above, are encountered within a sample, the auditor must handle them consistently and document the method in the sampling notification.

**Important Notes**

1. The number of clusters selected should be between 30 and 80 even if the Step 2 calculation yields different results (e.g., the items of interest percentage is 25 percent or more, the calculated number of clusters will exceed 80; but maximum of 80 clusters should be used)
2. Generally, the number of clusters is more important than the number of items in each cluster. The more clusters selected will result in a more representative sample. (e.g., 80 clusters of 30 items each is more representative than 40 clusters of 60 items each)
3. As the “items of interest” become less concentrated in the population (e.g., commingled records for Texas and other states, very low percent of deductions or purchase accounts of interest), a smaller number of clusters containing more transactions would be a more efficient sampling unit.
4. Cluster should be used for evaluating the sample. The auditor should subtotal the transactions within each cluster to obtain the dollar amount of each cluster. The individual transactions in a cluster should not be used to evaluate the sample (i.e., do not evaluate the sample as if it were a transaction sample).

## Chapter 6

# Time Period Sampling

Last on the hierarchy chart of sampling is the option of time period. Time periods are clusters of uneven size containing hundreds or thousands of transactions with varying dollar amounts. As stated previously, a statistical penalty is paid whenever fewer than 30 sampling units are selected. The uneven number of items in the cluster increases the sampling risk. However, time period sampling may be the only practical option for a particular audit situation. Auditor judgment involves the ability to choose the most appropriate sampling method under the circumstances and to defend the decision against all available alternatives. When using time period sampling, the auditor must document in the audit plan why other sampling methods (dollar-stratified, transaction, or cluster) are not feasible.

### **Step 1 – Select the sample units**

Days, weeks, and months are options for time period sampling. Quarters and years are not acceptable sampling units. The State's sampling software will randomly generate a sample. The auditor should keep in mind that the time periods selected should be adequately dispersed throughout the audit period and not heavily weighted to any particular period. For example, if more summer or holiday periods were selected, the results may be skewed. Or, if a six-month sample resulted in three Decembers being selected during a four-year audit period for a toy retailer, the auditor should select another sample to more adequately represent the normal business activity.

### **Step 2 – Perform an initial evaluation**

#### **Days**

**BEFORE** pulling and examining source documents for tax compliance, use sales journals, purchase journals, or other available documents to compile the total dollar amount of each day selected in the sample. Afterwards, calculate the sample and population base averages and the variance to determine how representative the sample is of the population.

#### **Weeks**

**BEFORE** pulling and examining source documents for tax compliance, use sales journals, purchase journals, or other available documents to compile the total dollar amount of each week selected in the sample. Afterwards, calculate the sample and population base averages and the variance to determine how representative the sample is of the population.

#### **Months**

**BEFORE** pulling and examining source documents, the following additional steps should be performed for 6-month samples:

1. Enter monthly sales or purchases accounts of interest amounts on a spreadsheet for the entire population.
2. Calculate the average and standard deviation (AVERAGE & STDEVP functions, respectively, in Microsoft Excel) of the population and note any months that fall outside two standard deviations of the average (mean).
3. Closely review any months that are not within two standard deviations to determine whether (a) these months should be removed from the population and addressed separately, (b) only certain items within the months should be removed and addressed separately, or (c) all of the months are representative of the population and should remain in the sample.

- Select 6 months for the sample and compare the averages of the sample and population bases to ensure the variance is within 15 percent.

A	B	C	D	E	F
	Column 1	Column 2	Column 3	Column 4	
Month	Account 500	Account 505	Account 507	Total Population Base (Columns 1+2+3)	Sample Base Months
Jan-01	45,810.35	17,946.20	84,272.85	148,029.40	
Feb-01	16,602.60	25,004.68	123,109.70	164,716.98	164,716.98
Mar-01	42,005.73	32,719.05	106,351.83	181,076.61	
Apr-01	24,696.75	9,959.39	29,649.27	64,305.41	64,305.41
May-01	28,413.71	16,675.23	64,208.95	109,297.89	
Jun-01	27,388.31	37,289.55	52,401.18	117,079.04	117,079.04
Jul-01	36,360.35	14,630.07	32,445.96	83,436.38	
Aug-01	34,537.36	24,681.32	31,268.47	90,487.15	
Sep-01	18,814.68	7,996.99	28,091.74	54,903.41	
Oct-01	27,599.95	45,424.30	27,232.57	100,256.82	
Nov-01	14,806.18	11,279.15	68,211.13	94,296.46	94,296.46
Dec-01	9,648.25	35,895.38	33,476.52	79,020.15	
Jan-02	8,281.09	25,311.17	29,320.46	62,912.72	
Feb-02	37,834.25	22,894.13	25,292.58	86,020.96	
Mar-02	24,318.84	5,429.84	15,096.94	44,845.62	
Apr-02	15,378.91	27,239.20	29,304.99	71,923.10	
May-02	23,066.85	8,696.57	50,940.85	82,704.27	82,704.27
Jun-02	16,301.26	27,497.90	21,981.92	65,781.08	
Jul-02	17,870.75	22,463.44	29,005.60	69,339.79	
Aug-02	17,305.77	22,203.57	19,667.31	59,176.65	
Sep-02	33,759.05	18,935.28	51,275.25	103,969.58	
Oct-02	42,465.11	7,567.43	60,467.72	110,500.26	
Nov-02	35,229.87	24,666.89	35,692.28	95,589.04	95,589.04
Dec-02	43,836.35	27,397.89	83,786.82	155,021.06	
Total	642,332.32	519,804.62	1,132,552.89	2,294,689.83	618,691.20
Average (Avg)				95,612.08	103,115.20
Standard Deviation (Std Dev)				35,225.84	
Avg + 2 Std Dev				166,063.76	
Avg - 2 Std Dev				25,160.39	
Variance				7.28%	

Notes:

- The averages for the population and sample base were calculated using the Excel formula =AVERAGE(E5:E28) and =AVERAGE(F5:F28)
- Standard deviation for the population was calculated using the Excel formula =STDEVP(E5:E28)
- Avg + 2 Std Dev calculation: =E31 + E32 + E32
- Avg - 2 Std Dev calculation: =E31 - E32 - E32
- The variance between the sample and population base averages calculation: =ROUND(1-(E31/F31),4) or =ROUND((F31-E31)/F31,4)

*As mentioned previously, the State does not use statistical sampling; however, auditors should use statistical tools for month samples, as listed above in step 2, to help make an informed decision regarding the population and sample.*

Every audit situation is different, so if there are extenuating circumstances preventing the performance of this initial evaluation, the auditor should consult with the supervisor or manager and document the reason in the audit plan.

Sample Base Average =  $\frac{\$ \text{ Amount of Sample Base}}{\# \text{ of time periods in Sample}}$

Population Base Average =  $\frac{\$ \text{ Amount of Population Base}}{\# \text{ of time periods in Population}}$

Variance =  $\frac{\text{Difference between sample and population base averages}}{\text{Higher of sample or population base average}}$

OR

=  $1 - \frac{\text{Lower of sample or population base average}}{\text{Higher of sample or population base average}}$

### **Step 3 – Perform a preliminary sample**

The preliminary sample, commonly referred to as the short-test, consists of reviewing the first 25 percent of the time periods selected from the minimum sample size recommended in the hierarchy chart. For a 6-month sample, generally the first two months selected will be reviewed. The items should be reviewed in the order selected.

### **Step 4 – Evaluate the short-test and make a stop-or-go decision**

Efficiency dictates that excessive hours not be spent in an unproductive manner. If no errors are found in the short-test, the sample examination should be abandoned; however, before deciding whether to abandon the sample, the auditor must be reasonably sure that the short-test results are representative of the population. Until the auditor evaluates the short-test by comparing the results to the population, there is no way of knowing whether the sample was representative and, consequently, whether finding no errors was a valid conclusion.

The following tests should be performed on the preliminary sample and documented in the audit plan regardless of whether errors are noted:

1. **Compare the average dollar value of all sample units to the average dollar value of the same type of units in the population.** Large differences in this comparison may indicate that the sample is not proportional to the population or that the sample units were selected from a sub-population rather than the population that generated the summary amounts.
2. **Compute and compare the percentage of non-taxed sales/purchases charged to accounts of interest in the sample to the percentage of non-taxed sales/purchases charged to accounts of interest in the population.** If both of these percentages are computed on the dollar value of the transactions, a difference may indicate an incomplete population or dollar value/invoice mix problem that will need to be addressed by the auditor.

If errors are noted, perform the following additional tests and document in the audit plan:

3. **Compute the percentage of error by dividing all errors by the total of all items reviewed in the short-test (i.e., the sample base).** This percentage of error can be used to compute the potential value of the sample, if any, by projecting that error to the appropriate population total. The error rate will also be used to verify frequency in future tests should the auditor decide to continue the sample.
4. **Compare the average dollar value of all errors noted to each individual error.** This may help to identify particular classes of errors or items that appear to be extraordinary. Further stratification of the sample and/or projection procedures may be indicated.

These tests will allow the auditor to verify and document completeness of the population and modify the sampling procedure, if necessary, before additional time is spent in an unproductive manner.

The decision to continue the sample should be based on the materiality of any errors noted (percentage of error multiplied by the population base multiplied by the tax rate) and the estimated time required to complete the examination. The decision of how much is necessary to justify continuing is a decision the auditor and supervisor should make based on guidelines determined by division management.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} = \text{Percentage of Error} \times \$ \text{ Population Base} \times \text{Tax Rate} = \text{Tax Due}$$

### **Step 5 – Complete the sample**

If sufficient material errors have been noted in the short-test to justify completing the sample, the auditor should issue the sampling notification. During the examination of the remaining 75 percent of the sample, the auditor should periodically review the sample results. Calculating the error rate, analyzing the type of exceptions noted, and reviewing the average dollar amount of errors and bases will alert the auditor to any changes that may be necessary to the sample such as refinement of the population or sub-population and increased sample size.

### **Step 6 – Project the results to the population**

The dollar value of the errors divided by the dollar value of the sample base will equal the error percentage. The error percentage multiplied by the dollar value of the population base will equal the amount subject to tax.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} \times \$ \text{ Population Base} = \$ \text{ Amount Subject to Tax}$$

### **Step 7 – Evaluate the sample**

See evaluation and analysis chapter for additional information.

## **Multiple Outlet Time Period Samples**

When a taxpayer has multiple outlets, it may be more efficient to perform a sample with a minimum of eighty (80) outlet days, fifty (50) outlet weeks, or thirty (30) to eighty (80) outlet months depending on the number of outlets. Remember, these are merely starting points; additional times periods may need to be selected. The auditor should review all outlets within the audit period to determine how outlets should be grouped. For example, the auditor may choose these groups based on deductions percentage, metro vs. rural, or border outlets vs. non-border outlets. There may be such significant differences between outlets that grouping them to perform an outlet time period sample is not an option. In certain situations, it may be more appropriate for the auditor to select one, regular 30-day sample, for example, and review those 30 days for each outlet (assuming each outlet is opened for the same periods during the audit; otherwise, a separate 30-day sample would need to be generated for outlets with different beginning & ending dates). See the population definition section in Chapter 2 for more information. After deciding the most homogenous grouping of outlets, the auditor should perform the following steps.

**Step 1 – Select the sample units**

Using the State’s sampling software, select the applicable time period unit (outlet days, outlet weeks, outlet months). Enter the outlet numbers in the reference field and the beginning & ending dates for each outlet.

An alternative to typing each outlet and beginning and ending date in the State’s sampling software is to use Excel and create a *txt* file to import the references into the State’s sampling software. Excel’s copy/paste feature generally allows for a more efficient entry system when there are a large number of outlets in the audit period.

**Example:** The auditor decides to use an outlet month sample for reviewing sales for a large retailer. There are 20 outlets for a 15-month audit period. The Excel spreadsheet is below.

Outlet	Beginning Period	Ending Period
1	1/1/2005	3/31/2006
2	1/1/2005	3/31/2006
3	1/1/2005	3/31/2006
4	1/1/2005	3/31/2006
5	1/1/2005	3/31/2006
6	1/1/2005	3/31/2006
7	1/1/2005	3/31/2006
8	1/1/2005	3/31/2006
9	1/1/2005	3/31/2006
10	1/1/2005	3/31/2006
11	1/1/2005	3/31/2006
12	1/1/2005	3/31/2006
13	1/1/2005	3/31/2006
14	1/1/2005	3/31/2006
15	1/1/2005	3/31/2006
16	1/1/2005	3/31/2006
17	1/1/2005	3/31/2006
18	1/1/2005	3/31/2006
19	5/1/2005	3/31/2006
20	7/1/2005	3/31/2006

1. After entering the first two outlet numbers, the user can highlight them, place the mouse in the bottom right-hand corner of the highlighted area and drag the mouse until all applicable outlets are automatically filled.
2. For the beginning & ending periods, the auditor can highlight them, select copy, and then paste those to the applicable outlets.

**Step 2 – Perform an initial evaluation**

If possible, the auditor should attempt to evaluate all selected outlet time periods in the short-test BEFORE pulling and examining source documents for tax compliance. If sales journals, purchase journals, or other type of documentation is available listing time period totals, the auditor should be able to quickly calculate the sample and population base averages and the variance. The variance is one indicator as to whether the sample selected is representative of the population. The variance should be within 15 percent for a manual sample.

$$\text{Sample Base Average} = \frac{\$ \text{ Amount of Sample Base}}{\# \text{ of outlet time periods in Sample}}$$

$$\text{Population Base Average} = \frac{\$ \text{ Amount of Population Base}}{\# \text{ of outlet time periods in Population}}$$

Variance =  $\frac{\text{Difference between sample and population base averages}}{\text{Higher of sample or population base average}}$

OR

=  $1 - \frac{\text{Lower of sample or population base average}}{\text{Higher of sample or population base average}}$

Additionally, the auditor should ensure that the outlet time periods selected for the sample are proportionate to the population. For example, if an outlet month sample were performed for 15 outlets for a 36-month audit period (a total of 540 population units), and the auditor planned to select 40 outlet months for the sample, the following analysis would provide the auditor with additional information before deciding whether to proceed with these random 40 outlet months or randomly select a different 40 outlet months.

**Audit Period: 5/1/05-4/30/08**

Outlet Number	Number of Months in Audit Period	% of Population	# of Outlet Months in Sample	Allocation of Sample Months
1	36	6.67%	40	2.67
2	36	6.67%	40	2.67
3	36	6.67%	40	2.67
4	36	6.67%	40	2.67
5	36	6.67%	40	2.67
6	36	6.67%	40	2.67
7	36	6.67%	40	2.67
8	36	6.67%	40	2.67
9	36	6.67%	40	2.67
10	36	6.67%	40	2.67
11	36	6.67%	40	2.67
12	36	6.67%	40	2.67
13	36	6.67%	40	2.67
14	36	6.67%	40	2.67
15	36	6.67%	40	2.67
Total	540	100.00%		40.00

Month	Number of Months in Audit Pd.	Number of Outlets in Audit Pd.	Total Number of Outlet Months in Population	% of Months in Population	# of Outlet Months in Sample	Allocation of Sample Months
May	3	15	45	8.33%	40	3.33
June	3	15	45	8.33%	40	3.33
July	3	15	45	8.33%	40	3.33
August	3	15	45	8.33%	40	3.33
September	3	15	45	8.33%	40	3.33
October	3	15	45	8.33%	40	3.33
November	3	15	45	8.33%	40	3.33
December	3	15	45	8.33%	40	3.33
January	3	15	45	8.33%	40	3.33
February	3	15	45	8.33%	40	3.33
March	3	15	45	8.33%	40	3.33
April	3	15	45	8.33%	40	3.33
Total	36		540	100.00%		40.00

From the above analysis, we would expect our sample to select each outlet 2 – 3 times and to select each month of the audit period 3 – 4 times. Due to the randomness of sample selection, these numbers will not always match perfectly but should be in close proximity. The bottom line is that we do not want 1 or more outlets or months in the sample out of proportion from the population.

### **Step 3 – Perform a preliminary sample**

The preliminary sample, commonly referred to as the short-test, consists of reviewing the first 25 percent of the outlet time periods selected from the minimum number of outlet time periods for the sample. The items should be reviewed in the order selected. For example, if 80 outlet months were the sample unit, 20 outlet months should be reviewed in the short-test.

### **Step 4 – Evaluate the short-test and make a stop-or-go decision**

Efficiency dictates that excessive hours not be spent in an unproductive manner. If no errors are found in the short-test, the sample examination should be abandoned. However, before deciding whether to abandon the sample, the auditor must be reasonably sure that the short-test results are representative of the population. Until the auditor evaluates the short-test by comparing the results to the population, there is no way of knowing whether the sample was representative and, consequently, whether finding no errors was a valid conclusion.

The following tests should be performed on the preliminary sample and documented in the audit plan regardless of whether errors are noted:

1. **Compare the average dollar value of all sample units to the average dollar value of the same type of units in the population.** Large differences in this comparison may indicate that the sample is not proportional to the population or that the sample units were selected from a sub-population rather than the population that generated the summary amounts.
2. **Compute and compare the percentage of non-taxed sales/purchases charged to accounts of interest in the sample to the percentage of non-taxed sales/purchases charged to accounts of interest in the population.** If both of these percentages are computed on the dollar value of the transactions, a difference may indicate an incomplete population or dollar value/invoice mix problem that will need to be addressed by the auditor.

If errors are noted, perform the following additional tests and document in the audit plan:

3. **Compute the percentage of error by dividing all errors by the total of all items reviewed in the short-test (i.e., the sample base).** This percentage of error can be used to compute the potential value of the sample, if any, by projecting that error to the appropriate population total. The error rate will also be used to verify frequency in future tests should the auditor decide to continue the sample.
4. **Compare the average dollar value of all errors noted to each individual error.** This may help to identify particular classes of errors or items that appear to be extraordinary. Further stratification of the sample and/or projection procedures may be indicated.

These tests will allow the auditor to verify and document completeness of the population and modify the sampling procedure, if necessary, before additional time is spent in an unproductive manner.

The decision to continue the sample should be based on the materiality of any errors noted (percentage of error multiplied by the population base multiplied by the tax rate) and the estimated time required to complete the examination. The decision of how much is necessary to justify continuing is a decision the auditor and supervisor should make based on guidelines determined by division management.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} = \text{Percentage of Error} \times \$ \text{ Population Base} \times \text{Tax Rate} = \text{Tax Due}$$

### **Step 5 – Complete the sample**

If sufficient material errors have been noted in the short-test to justify completing the sample, the auditor should issue the sampling notification. During the examination of the remaining 75 percent of the sample, the auditor should periodically review the sample results. Calculating the error rate, analyzing the type of exceptions noted, and reviewing the average dollar amount of errors and bases will alert the auditor to any changes that may be necessary to the sample such as refinement of the population or sub-population and increased sample size.

### **Step 6 – Project the results to the population**

The dollar value of the errors divided by the dollar value of the sample base will equal the error percentage. The error percentage multiplied by the dollar value of the population base will equal the amount subject to tax.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} \times \$ \text{ Population Base} = \$ \text{ Amount Subject to Tax}$$

### **Step 7 – Evaluate the sample**

See evaluation and analysis chapter for additional information.

## Chapter 7

# Written Notification of Sampling & Estimation Procedures

### Why is the notification needed?

The statute, Section 111.0042 requires that the taxpayer be provided written notification of the sampling procedures used in establishing a tax liability. The sampling notification applies to all tax audits and a separate sampling notification must be issued for each sample. Section 111.0042 does **not** contain express requirement mandating the Comptroller to issue a written estimation notification although the agency does so as a matter of standard practice.

- A sampling notification should be issued if less than an audit of all detailed records is performed.
- An estimation notification should be issued if there are inadequate records.

### When and how should the notification be issued?

The notification should be issued at the earliest possible time – no later than after completion of the 25 percent short-test if the sample is to be completed. The notification should be hand delivered whenever possible; otherwise, it should be sent via certified mail.

### Who should receive the notification?

The notification should be handed or mailed to the person with the authority to enter into written agreements—normally an officer, director, partner, or owner. Copies should be sent to other employees of the taxpayer as the audit situation dictates (i.e., primary contact, taxpayer representatives, etc.). The audit questionnaire will most likely indicate the authorized individual, but the auditor should verify that the information is correct during the initial telephone contact and entrance conference.

### What should the notification include?

The form should include sufficient detail for the taxpayer to fully understand the sampling or estimation procedures. The books and records should be referenced by the names that the taxpayer refers to them. The procedures should be specific. Specific accounts of interest should be listed. If outlets or divisions are examined separately, subcategorize the notification. If a sample is to be stratified due to a law change, it should be noted.

### Special Notes

An amended notification should be issued if there is a change in the information or sampling procedures contained in the original notification. The amended notification should be clearly identified—“Amended Notification – this supersedes the previously issued notification of MM/DD/YY.”

- Include in section 8 “Separate projections will be made for State and Local taxes where applicable.”
- All notifications given to the taxpayer should be included in the audit package as exhibits. Original and amended notifications should be labeled as one exhibit. Indicate that the amended notification supersedes the original. The most current version should appear first in the audit package.
- There are two separate types of notification—sampling and estimation. The auditor should select the appropriate one for the situation.

## Comptroller of Public Accounts State of Texas

### *Notification of Sampling Procedures for State Tax Audit*

**Taxpayer Name:** ABC Company Inc.  
**Taxpayer Number:** 12345678903  
**Type of Tax:** State and Local Sales and Use Taxes as Administered by the Comptroller  
**Audit Period:** Beginning and ending calendar date of audit (e.g., July 1, 1999 through January 31, 2003)  
**Reporting Category:** (Gross Sales, Deductions, Taxable Sales or Taxable Purchases)      **Subcategory:** (Expenses, Specific outlets, etc.)

1. **The records to be examined in performing the sample will include (but are not limited to):**  
A complete list should be made of all records necessary to make decisions regarding the possible adjustments.
2. **The sampling unit will be:**  
The sampling unit is the type of item being selected: transactions, groups (page/line), clusters, days, weeks, or months.
3. **The method of selecting the units will be:**  
The answer will usually be computer generated random selection. *Indicate the program used to select the units: CATS,, CAMS-PC, CAMS-Mainframe or WATS.* Different algorithms and program coding used in each of these programs results in different samples when selecting the units; therefore, list the program. It is preferable that a separate sheet (sample items report) be attached to the notification listing the sample units. Sufficient information should be noted (seed number, etc.) to generate an identical sample.
4. **The sample size will be:**  
Record the number of units to be examined (e.g., 500 tax-free sales, 30 clusters of 105 invoices each, 30 days, etc.). A list of actual units (sample items report) should be provided as an attachment. This is especially important if the audit schedules or work papers will not list all transactions or other units.
5. **If a time period sample is used, the selected periods will be:**  
List the individual time periods to be examined. Use an attachment if necessary. If not using time period, place N/A in this space or leave it blank.
6. **The sample base will be:**  
Usually it will be the total dollar value of all items examined and how the total was obtained. Be careful to distinguish between all sales examined (gross sales) and all tax-free sales examined (deductions). For expense purchases, the sample base may represent either accounts of interest or all accounts. *It is imperative that whatever criteria was used to define the population* (e.g., specific account numbers, outlet numbers, time periods, region codes, tax flags, source codes, etc.) be listed here or on an attached supplement. It is helpful to reiterate the sample size that was listed in Item #4 above to distinguish the sample base from the population base size. *The information in this section should be so detailed that a third-party would understand completely what comprises the sample base and could re-create it (see example on following page).*
7. **The population base will be:**  
Usually it will be the total dollar value of all items in the audit period (unless, of course, the population is constrained by other criteria) to distinguish it from the sample base. *It is imperative that the criteria used to define the population* (e.g., specific account numbers, outlet numbers, time periods, region codes, tax flags, source codes, etc.) *be listed here or on an attached supplement.* It should be evident

that the sample and population bases are equivalent and that the sample base is included in the population base. *The information in this section should be so detailed that a third-party would understand completely what comprises the population base and could re-create it (see example on following page).*

8. **The results of the sample will be applied to the population using the following procedures:**

The description of the projection method should be in sufficient detail so that the taxpayer can understand how the error rate is calculated and how it is applied on a period-by-period basis. It also should be noted that “separate percentages of error will be calculated for state and local taxes where applicable” in order to allocate the tax due to the appropriate taxing entity. If local tax will be projected differently, a full description of the method should be included in each of the eight questions as appropriate. A separate description is usually necessary if only local tax errors are being projected.

Example 1: “The total taxable dollar value of the errors revealed by the sample will be divided by the total taxable dollar value of the 500 transactions in the sample to obtain a percent of error. This percent of error will be multiplied by audited gross sales each month to determine the amounts of additional tax due. Separate percentages of error will be calculated for state and local taxes where applicable “

Example 2: “The total dollar amount of errors will be divided by the sample base to obtain a percentage of error. The percentage of error will be multiplied by the population base to determine the amount of additional tax due. Separate percentages will be calculated for state and local taxes where applicable.”

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**This notification was hand delivered/mailed on      Date:**

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**TO:**

**Title:**

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**SIGN HERE >**

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Comptroller’s Representative

**Example of Notification Supplement for a dollar-stratified transaction sample:**

**ABC Company Inc.** **JD** **11/18/02**  
**Supplement to Notification of Sampling-Expense Purchases** **TP# 1234567890**

Group Number	Exam Number	Low Range Amount	High Range Amount	Sample Base Amount	Sample Base # of Items	Population Base Amount	Population Base # of Items
1	1000	100.01	500.00	24,000.00	100	255,000.00	1,035
1	1010	500.01	2,000.00	99,000.00	100	571,000.00	590
1	1020	2,000.01	max	638,000.00	90	638,000.00	90
2	2000	0.01	100.00	4,900.00	100	100,500.00	2,095
2	2010	100.01	500.00	20,000.00	100	143,000.00	740
2	2020	500.01	max	684,500.00	230	684,500.00	230
3	3000	0.01	200.00	6,300.00	100	845,000.00	12,465
3	3010	200.01	1,200.00	42,000.00	100	1,820,000.00	4,095
3	3020	1,200.01	5,000.00	201,000.00	100	1,675,000.00	775
3	3030	5,000.01	max	1,475,000.00	160	1,475,000.00	160

All groups include the entire audit period.

Group 1 contains journal code 'AP' for account 4000 for all Texas branches.

Group 2 contains journal code 'AP' for account 4500 for all Texas branches.

Group 3 contains journal code 'AP' for branches 9120, 9200, and 9230 for the following accounts:

7201 -7210

7221-7230

7301-7305

7401-7515

7520

7525

## Comptroller of Public Accounts State of Texas

### *Notification of Estimation Procedures for State Tax Audit*

**Taxpayer Name:** ABC Company Inc.  
**Taxpayer Number:** 12345678903  
**Type of Tax:** State and Local Sales and Use Taxes as Administered by the Comptroller  
**Audit Period:** Beginning and ending calendar date of audit (e.g., July 1, 1999 through January 31, 2003)  
**Reporting Category:** (Gross Sales, Deductions, Taxable Sales or Taxable Purchases)      **Subcategory:** (Expenses, Specific outlets, etc.)

1. Reason for estimation (*including a description of records which the taxpayer failed to provide after notification from the auditor by letter or subpoena*):
  
2. The records to be examined in performing the estimation will include (but not limited to):
  
3. List periods (*they may or may not be the entire audit period*) being estimated:

**“The periods listed in number 3, under audit are being estimated based on the best information available due to your failure to maintain/provide adequate records for a sample in compliance with Comptroller policy. Since adequate records were not maintained/provided, no credit projections will be allowed based on the estimation procedures used by the Comptroller.”**

4. Describe procedures taken to perform estimate:

**This notification was hand delivered/mailed on      Date:**

**TO:**

**Title:**

**SIGN HERE >**

Comptroller’s Representative

## Guidelines for Notification of Estimate

### **Documentation Procedures for Notification of Estimate**

If a taxpayer fails to provide part or all of the records requested for a sample, the auditor should issue the taxpayer a letter stating the records needed and giving a deadline to provide them. The letter should state that if the requested records are not provided, the audit will be estimated due to the taxpayer's failure to maintain/provide adequate records in accordance with Comptroller policy (Letter 1). This letter should be an exhibit in the audit.

The taxpayer should also provide the auditor with a letter stating the reason why records will not be provided. Perhaps the taxpayer has a valid reason such as records destroyed in a fire or flood. Or, perhaps the taxpayer simply refuses to provide the requested records. We cannot force the taxpayer to write this letter. If the taxpayer does not provide the letter, the auditor should issue a follow-up letter (Letter 2) listing all of the dates the records were requested, stating that the records were not provided, and reiterating that this portion of the audit will be estimated. This letter (Letter 2) should be an exhibit in the audit.

The sample of the period when records are available should comply with our written policies on sampling. This projection should be separate from any estimate used in the period(s) when no records are available. (It may, in some cases, be used as the basis of an estimate if it is the best information available, but it is clearly a separate issue.)

The Notification of Estimation for the period(s) being estimated will contain the following information in #3: "The following period(s) under audit are being estimated based on the best information available due to your failure to maintain/provide adequate records for a sample in compliance with Comptroller policy." (**If we can not make this statement then we should be performing a sample that complies with our policies.**) The notification should then explain the basis used for the estimate of the liability assessed for those periods when adequate records are not provided.

All estimates should be separated from any periods in which valid samples were performed. The legal guidelines that apply to valid samples and those applying to estimates when records are inadequate or not available are different and necessitate that those issues be clearly separated.

### **Notification of Estimate Should Be Issued Without Changes in the Template**

- Taxpayer refuses to provide all or part of the records
- Taxpayer does not have all or part of the records
- Convenience store — auditor used the purchase ratio method but projected into an estimated population
- Convenience store – auditor used industry averages information because taxpayer's records are incomplete or unreliable
- Convenience store – auditor obtains third party information because taxpayer's records are incomplete or unreliable

### **Notification of Estimate Should Be Issued With Changes in the Template**

- Bring audit current using upon the taxpayer's request
  - » #1 of the notification – "(including a description of records which the taxpayer failed to provide after notification from the auditor by letter or subpoena)" should be deleted
  - » #1 of the notification – the reason for the estimate is the taxpayer's written request to bring the audit current.
  - » #3 of the notification – "**due to your failure to maintain/provide adequate records for a sample in compliance with Comptroller policy. Since adequate records were not maintained/provided, no credit projections will be allowed based on the estimation procedures used by the Comptroller.**" should be deleted

**Notification of Estimate Is Not Needed**

- A few source documents are missing in a sampled or detailed audit – auditor uses reliable alternative records
- Source documents are missing for a few months but the auditor has reliable alternative records

**Does Not Need Either a Notification of Sampling or a Estimate**

- Using third-party records to establish fair market rental value for equipment with divergent use
- Taxpayer (TP) & auditor agree on taxable or exempt percentage based on TP records
- Additional taxable sales based on the gross sales or tax reconciliation

**Other Questions**

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- **Question:** What if the taxpayer and auditor agreed to review two months instead of six months in a sample even though the records are available?  
**Answer:** This is not an estimate because the taxpayer's records were available. It is against audit division sampling guidelines!
- **Question:** The period is 9906 – 0212. To calculate the population base the auditor took the year-end account balances for 1999, 2000, 2001, and 2002 and divided each by 12. The yearly average was entered for each month of the corresponding year. Is this an estimate?  
**Answer:** The auditor can prorate the population bases for 2000 – 2002 because the entire year is in the audit period and a notification of estimate is not needed. However, only a portion of 1999 is in the audit period. If the taxpayer provides records for 9906 – 9912, actual figures must be used for these periods.
- **Question:** What if the auditor schedules account balances without looking at the source documents?  
**Answer:** If the taxpayer provides records, the auditor cannot estimate. Therefore, a notification of estimate is not needed.

## Chapter 8

# Evaluation & Analysis

Evaluating the sample throughout the entire process is imperative. The auditor should be continually compiling information and documenting the findings in the audit plan and work papers in case the sample is challenged. Audit Division has adopted and incorporated into our audit plan substantially all of the recommended documentation per SAS NO. 41 (Working Papers) and SAS NO. 39 (Audit Sampling) required to support non-statistical sampling procedures. According to the AICPA Audit Sampling guide, examples of the type of documentation consist of the following:

- Description of the prescribed control procedure being tested
- Objectives of the sampling application, including its relationship to the assessment of control risk.
- Definition of the population and the sampling unit, including how the auditor considered completeness of the population
- Definition of the deviation condition
- Risk of assessing control risk too low, the tolerable deviation rate, and the expected population deviation rate used in the application
- Method of sample-size determination
- Method of sample selection
- Description of how the sampling procedure was performed and a list of deviations identified in the sample
- Evaluation of the sample and a summary of the overall conclusion

### Preliminary & Periodic Evaluation

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Many of the tests performed periodically throughout the sample have been discussed in previous chapters and include the following:

- Compare the average dollar value of all sample units to the average dollar value of the same units in the population.
- Compute and compare the percentage of non-taxed sales/purchases charged to accounts of interest in the sample to the percentage of non-taxed sales/purchases charged to accounts of interest in the population (i.e., make sure the non-taxed sales or accounts of interest are represented in the sample and population in similar proportions).
- Compute the percentage of error by dividing all errors by the total of all items reviewed in the sample base.
- Compare the average dollar value of all errors noted, if any, to each individual error.

The above tests provide the auditor with information needed to make decisions on whether or not the sample should be continued, expanded, stratified, or abandoned.

### Final Evaluation

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After completing the examination of all sample units, the auditor will perform a final evaluation and document the results in the sample section of the audit plan. By comparing the results from following analysis, the auditor will have a good indication that the State's sampling guidelines were followed and that the adjustments reflect the taxpayer's normal business operations. The auditor should not prioritize one over the other but focus on reviewing all to reach a conclusion.

### **Analysis of Sampling Risk and Variance**

Sampling risk represents the amount that the sample results could differ from a detail of the population. Since the State uses non-statistical sampling, we do not precisely measure sampling risk; however we can measure the amount of risk involved with projecting the same results using different projection methods. The calculation of the dollar difference between the ratio and mean estimates tells the auditor whether or not risks related to the sample have improved when changes (expanded, extraordinary items deleted, stratified, etc.) are made. Ratio estimate reflects the exceptions noted in the sample as a percentage of each dollar examined. Mean estimate is a flat projection based on the dollar value of exceptions on a per unit basis; it is based on the assumption that each transaction examined will have the same adjustment amount. A lower sampling risk is indicative of a more representative sample. Sampling risk includes many variables affecting the execution of the sample such as, extraordinary items or improper stratification. By comparing the sampling risk before and after a sample has been changed (i.e., expanded, extraordinary items deleted, etc.), the auditor will know if the sample has become more representative or further distorted. If the sampling risk between the ratio and the mean estimate becomes smaller after a change has been made to a sample, the change made the sample more representative. If the sampling risk between the ratio and the mean estimates becomes larger after a change has been made to the sample, the sample has become further distorted. This would indicate that the change (e.g., extraordinary item) does occur with frequency in the population. The results should be documented and the original sample should be used.

#### **Ratio Estimate**

The dollar value of the error found in the sample is divided by the total dollar value of the items comprising the sample to obtain a ratio or percent of error. The percent of error is multiplied by the dollar value of the items comprising the population to determine the total error subject to tax.

$$\frac{\$ \text{ Errors}}{\$ \text{ Sample Base}} \times \$ \text{ Population Base} = \$ \text{ Amount Subject to Tax}$$

#### **Mean Estimate**

The total dollar value of the error in the sample is divided by the number of sample units to determine the average error per unit. The average error is multiplied by the number of units in the population to determine the total dollar value of the error.

$$\frac{\$ \text{ Errors}}{\# \text{ of units in sample}} \times \# \text{ of units in population} = \$ \text{ Amount Subject to Tax}$$

The maximum variance of 15 percent for manual samples and 8 percent for dollar-stratified samples is the acceptable tolerance limit between the sample and population base averages. It addresses the sampling risk factor of similarity of size. The variance can be calculated using any of the following:

$$= \frac{\text{Difference between sample and population base averages}}{\text{Higher of sample or population base average}}$$

OR

$$= 1 - \frac{\text{Lower of sample or population base average}}{\text{Higher of sample or population base average}}$$

OR

$$= \frac{\text{Sampling Risk}}{\text{Higher of ratio or mean amount subject to tax}}$$

OR

$$= 1 - \frac{\text{Lower of ratio or mean estimate}}{\text{Higher of ratio or mean estimate}}$$

Generally, as with sampling risk, when the variance decreases, the sample has improved, and when the variance increases, the sample has become further distorted. Occasionally, however, an inverse relationship may result between the sampling risk and variance (i.e., one increases while the other decreases or visa versa). When this inverse relationship occurs, the auditor should consider whether or not changes to the sample were appropriate (e.g., removal of an item thought to be extraordinary but actually occurred with frequency in the population).

### Analysis of Errors

A sample should be representative of the taxpayer's normal business operations; therefore, it is important for the auditor to carefully scrutinize the errors. Not only should the auditor compare the individual error to the average error but also review the errors for frequency of occurrence.

The auditor should compare the average of all errors to each individual error in the sample to determine whether there are any extraordinary errors that may need to be addressed. This comparison will help avoid an unrepresentative skewing of results. Consider pulling extraordinary items out of the sample (i.e., removing from the errors, sample base, and population base). If amounts are removed from the sample, consider either detailing specific customers/accounts or performing a separate projection.

**Reminder: Extraordinary error means that the error does not occur with frequency; therefore, the population should be scrutinized for all like items.** If it is not possible to obtain the amounts of all extraordinary items, the amounts should remain in both the sample base and population base (to keep them homogeneous), but no adjustment will be made or projected in the sample.

Extraordinary items should be scheduled in a separate exam.

For time period samples, the auditor should perform an additional step of comparing the error percentage for each time period (e.g., day, month) to make sure that there is not a particular time period out of the normal range for the taxpayer's operations. For example, if the error percentage for one time period is 50 percent whereas the error percentages for the other time periods are about 20 percent, the auditor may need to scrutinize the period with the 50 percent error to determine the reason (e.g., personnel or policy change) and make the appropriate adjustments.

#### Example

	Sample Error	Sample Base	Population Base
(a) Total dollar amount	\$ 10,000	\$ 30,000	\$ 220,000
(b) # of transactions		6	40
(c) Average \$ amount of (b)		\$ 5,000	\$ 5,500

The variance between the sample and population bases is 9.09 percent ( $1 - 5,000/5,500$ ) and is within 15 percent (manual sample)

Sample Period	Adjustment (\$)	Sample Base (\$)	% of Error
0010	1,200	4,000	30%
0102	1,470	4,200	35%
0106	1,595	5,500	29%
0204	2,250	5,800	39%
0209	2,000	5,600	36%
0308	1,485	4,900	30%

The error percentage for each sample period is fairly consistent without any large deviation.

### Analysis of Projection Bases

Sometimes, regardless of how carefully a sample was planned and designed initially, certain factors may not be known or simply cannot be handled until the end. Consider, for example, the issue of law changes, certain vendors/customers, accounts, or types of errors. It may be necessary to stratify the population in order to more accurately reflect the errors in a particular population. Auditors should be mindful of the following:

- Generally recognized sampling techniques require that the results of a sample be applied only to the population from which the sample is selected.
- The results of the sample, when projected to the population, should match as closely as possible the errors identified to the population that generated them.

Analyzing other projection bases will not be necessary in every audit. After reviewing the sampling risk, variance, and errors, the auditor will use his or her professional judgment to decide whether or not using other projection bases is appropriate.

#### Example

Audit Period: January 1, 1999 through December 31, 2002

Type of sample: Transaction sample of 250 items for sales

Type of errors: Invalid resale or exemption certificates and county sales tax not billed

Other facts: All of the 110 errors occurred in the first 2 years of the audit period when salesmen were making taxability decisions. The company changed its policy as of January 1, 2001 and, the company controller became responsible for taxability decisions. No errors occurred after this time.

The auditor performed the following evaluation of the entire sample:

	Sample Error	Sample Base	Population Base
(a) Total dollar amount	\$ 14,300	\$ 30,000	\$ 500,000
(b) # of transactions	110	250	4,000
(c) Average \$ amount of (b)	\$ 130	\$ 120	\$ 125

The variance between the average sample and population base is 4 percent ( $1 - 120/125$ ).

Ratio Estimate =  $\$14,300 / \$30,000 \times \$500,000 = \$238,333.30$

Mean Estimate =  $\$14,300 / 250 \times 4,000 = \$228,800.00$

$$\text{Sampling Risk} = \$238,333.30 - \$228,800.00 = \$9,533.30$$

$$\text{Variance} = \$9,533.30 / \$238,333.30 = 4 \text{ percent}$$

The auditor also evaluated the sample based on stratifying the population for just the period of January 1, 1999 through December 31, 2000 when errors occurred:

	Sample Error	Sample Base	Population Base
(a) Total dollar amount	\$ 14,300	\$ 16,200	\$ 255,000
(b) # of transactions	110	120	1,500
(c) Average \$ amount of (b)	\$ 130	\$ 135	\$ 170

The variance between the average sample and population base is 20.59 percent ( $1 - 135/170$ ).

$$\text{Ratio Estimate} = \$14,300 / \$16,200 \times \$255,000 = \$225,092.58$$

$$\text{Mean Estimate} = \$14,300 / 120 \times 1,500 = \$178,749.99$$

$$\text{Sampling Risk} = \$225,092.58 - \$178,749.99 = \$46,342.59$$

$$\text{Variance} = \$46,342.59 / \$225,092.58 = 20.59 \text{ percent}$$

The auditor should calculate and document in the audit plan both evaluations—the sample in aggregate and the sample as stratified. Due to an increased sampling risk and variance, the auditor should review the stratified sample and population bases for any large transactions that were not a factor in the original population (i.e., perhaps there is a large dollar item in the reduced population that is extraordinary). The fact that the stratified sample does not evaluate is not important; the key is that the sample must evaluate in aggregate. The goal should be to properly match the errors to the sample and population that generated them. It would not be representative of the normal business operations to project an error ratio into a period due to a change in company policy.

### Summary

All these techniques are useful in determining whether the sample is representative of the population. Some may also provide insight regarding whether a given transaction or group of transactions is representative. As stated before, samples should provide the fairest result possible. In questions of materiality, reliability of possible projection bases, and the sample and projection technique used, the auditor who performed the audit is in the best position to make these decisions based on first hand knowledge of the taxpayer's operations and internal control procedures.

One final question should be asked before a sample evaluation is complete:

***If another sample were selected of the same size from the same population, would the errors noted be substantially similar to those noted in this sample?***

The answer to this question may indicate that either more work is required or that the sample is complete.

The auditor has the burden of providing a sample that is in compliance with generally recognized sampling procedures. The taxpayer has the burden of providing evidence that the results of the sample, as projected to the population, are not representative of the normal conditions under which the business operates.

### Examples for Understanding Sample Results

Example 1 – This illustrates how a representative sample should appear.

	Sample Error	Sample Base	Population Base
(a) Total dollar amount	\$ 47,350	\$ 240,000	\$ 3,795,860
(b) # of transactions	50	250	3,581
(c) Average \$ amount of (b)	\$ 947	\$ 960	\$ 1,060

The variance between the sample and population bases is 9.43 percent ( $1 - 960/1,060$ ) and is within 15 percent

Example 2 – This demonstrates how a sample base is representative of the population base but not the errors.

	Sample Error	Sample Base	Population Base
(a) Total dollar amount	\$ 88,722	\$ 240,000	\$ 3,795,860
(b) # of Transactions	31	250	3,581
(c) Average \$ amount of (b)	\$ 2,862	\$ 960	\$ 1,060

The variance between the sample and population bases is 9.43 percent ( $1 - 960/1,060$ ) and is within 15 percent. However, the average error seems significantly higher than the sample and population base averages.

There is no variance calculation between the average error and the average sample and population base. The average error is compared to each individual error to analyze whether any extremely large amounts have been scheduled. Remember, an item is extraordinary if it does not occur with frequency in the population, so the auditor should review like items in the population. If the auditor has determined from the population review that the items are extraordinary, the transactions should be removed from the errors, sample base, and population base. The sampling risk and variance should be re-calculated to determine whether the removal of the extraordinary transactions made the sample better or worse. If the sampling risk and variance increase, this would indicate that the sample became less representative of the population; therefore, the sample should remain unchanged. If the sampling risk and variance decrease, this would indicate that the sample improved; therefore, the transactions should be removed from the errors and sample and population bases. These transactions should be detailed separately, included in a separate projection, or ignored because of materiality.

Example 3 – This illustrates how the errors are more representative of the population than the sample.

	Sample Error	Sample Base	Population Base
(a) Total dollar amount	\$ 26,728	\$ 178,000	\$ 3,733,344
(b) # of Transactions	26	250	3,576
(c) Average \$ amount of (b)	\$ 1,028	\$ 712	\$ 1,044

The variance between the sample and population bases is 31.8 percent ( $1 - 712/1,044$ )—not within the 15 percent agency guideline.

There may be several reasons why the sample does not evaluate. It could be due to the randomness of the selection. To correct this situation, the auditor may need to expand the original sample to include more transactions. If the complete sample is representative of the population, this should decrease the variance. Also, the large variance could be due to the population and sample bases not containing like items. The auditor should double-check the population to make sure there are no additional business activities, inter-company transfers, or additional invoice sequences.

## Chapter 9

# Special Topics

### Purchases

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Sampling taxable purchases presents certain issues of which the auditor should be aware.

#### **Purchase Mix**

After a purchase sample has been selected and partially examined (normally by the 25 percent stop-or-go decision point), the auditor should ensure that the percentage of the dollar value of accounts of interest in the sample is reasonably close to the percentage in the population. For example, if the building repairs account comprises 32 percent of the total dollar value of the accounts of interest in the population, but the sample dollars only contain 1 percent of building repairs, additional items should be reviewed in the sample. The auditor should also be aware that this might indicate that some purchases are not being purchased in the same manner (i.e., inter-company transfers).

#### **Assets**

Asset purchases do not lend themselves to sampling as readily as do expense purchases; assets are generally comprised of non-recurring items whereas expenses are comprised of more recurring items. In a manually performed audit, assets will usually be reviewed in detail by specifically identifying each purchase by examining account codes, general ledgers, depreciation schedules, and the corresponding source documents. In dollar-stratified computer auditing, a 100 percent examination of the high dollar layer can be made. Also, if assets are in lower dollar layers, an appropriate evaluation of the type of asset and its likelihood to recur can allow these items to be sampled.

With very few exceptions, assets should not be sampled with expense purchases. Generally, assets contain higher dollar values, receive closer scrutiny for future development planning, and receive special treatment for federal income tax purposes. Consequently, different error percentages exist between assets and expenses.

#### **Recording Purchases**

Taxpayers record purchases with various types of entries. Many items may be inter-company billings, which are evidenced only by journal voucher. For example, if the taxpayer has a centralized purchasing operation, especially if multiple corporations are involved, transactions may be recorded by a journal entry. Therefore, auditors must examine both accounts payables (balance sheet data) and expense distributions (income statement data) to be sure all items are included in the examination. Care must be taken not to schedule items twice when posted in both.

#### **Summary**

1. Ensure that the dollar value of accounts of interest in the sample and population are proportionate.
2. Separate assets from expenses.
3. Separate taxed items from non-taxed items whenever possible.
4. Verify how transactions are recorded—expensed versus journal entry—to ensure that all transactions are included but not duplicated.

## Negative Transactions

Due to the variety and diversity of the negative transactions encountered in a particular sample, there is no one rule to apply to all situations. However, the following guidelines should promote consistent treatment:

1. If a negative transaction is selected as a sample unit, it should be allowed to reduce the sample base. This will make the sample and population bases homogeneous. If a time period sample is used, the daily or monthly total that becomes the sample base will already have been reduced by the negative transactions that occurred on that day or month, so no adjustment is required.
2. If the negative transaction is not representative, it should be removed from the sample and population bases, and addressed separately. Example: Assets are written down from book value due to a merger or purchase of a company for an amount less than its book value. This is an extraordinary action, and the negative transactions posted to the respective accounts should be removed from the sample and population bases.
3. If the negative transaction is representative, it should stay in the sample base. However, remember that just because a negative transaction appears in the sample base, it does not make it a negative exception (error). It is possible that the credit was given in error (e.g., acceptance of an invalid certificate) and should be scheduled as a positive amount in the errors.
4. If there is a net negative sample base in a manual audit, review the negatives in the sample to identify the cause of the problem. This situation is indicative of possible extraordinary negatives in the population. Taxpayers are not normally in business to have more returns than sales or to return more items than they purchased. It is possible that a contra or pass-through account is included in the sample and population base.
5. If there is a net negative sample base in a dollar-stratified (CAMS) audit, adjust the dollar value of the various strata or consider changing how the dollars are stratified—actual value versus absolute value. This situation may occur when there are a large number of low dollar negatives (e.g., credits for tax only) that are stratified into a dollar range that did not generate them.

## Avoidance of Double Taxation

The State does not want tax twice on the same transaction. Therefore, the following guidelines should be followed to avoid the situation of double taxation:

### ***If auditing the purchaser who...***

- claims item was accrued by seller, the purchaser must provide the following:
  - » a copy of seller's sales tax workpapers
  - » a copy of seller's sales tax payable account
  - » a copy of seller's canceled check to the state
- claims item was assessed in seller's *detail* audit, the purchaser must provide the following:
  - » error exam schedule(s) proving that the exact item was assessed in seller's audit
- claims item was assessed in seller's *sample* audit, the purchaser must provide the following:
  - » the sample error exam with the exact same item scheduled as an error because a certificate could have been issued by the purchaser to the seller. It is insufficient proof to have an item in the sample base and/or population base(s); the item **MUST** have been directly assessed in the error exam.

### ***If auditing the seller who...***

- claims item was accrued by the purchaser, the seller must provide the following:
  - » a copy of purchaser's work papers
  - » a copy of purchaser's sales tax payable account
  - » a copy of purchaser's canceled check

- claims item was included in purchaser's *detail* audit, the seller must provide the following:
  - » error exam schedule(s) proving that the exact item was assessed in purchaser's audit
- claims item was included in purchaser's *sample* audit, the seller must provide the following:
  - » a copy of the sampling notification for the purchaser's audit showing that
    - the audit covered the same periods as the sales in question (probably will not have the exact *audit* period but overlap of some periods)
    - the population base contains like items to the sales in question
  - » a copy of the error exam showing like items were scheduled (i.e., the sample was projected and tax was assessed in the purchaser's audit)

It is the taxpayer who has the burden of proof by providing the auditor the documentation listed above.

## Corrected Errors

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The decision to delete an item from the sample and projection has been made in the past on a case-by-case basis depending on the nature of the event that caused the correction. Such items are sometimes deleted totally and at other times only as an individual deletion after the projection. In addition to the guidelines established in the avoidance of double taxation section, timing differences need to be considered by the auditor.

### ***Individual deletion after the projection***

Example 1—The seller receives notification from the Comptroller of an upcoming audit or 61st day and decides to mail letters to all customers for whom resale or exemption certificates are not on file. Some of the customers inform the seller that a resale or exemption certificate was not applicable to their purchase. As a result, either the seller collects the tax and remits the tax to the state, or the customer accrues the tax and remits the tax to the state.

Example 2—The seller receives notification from the purchaser (under audit) that tax was not charged, so the seller bills the purchaser for the tax, and the purchaser pays the tax to the seller.

Example 3—The purchaser receives notification from the Comptroller of an upcoming audit and decides to review all purchases on which tax was not paid but should have been paid. The purchaser decides to accrue use tax (or pay tax to the vendor) on those purchases handled incorrectly. Documentation proving the accrual and payment of tax was provided.

**Solution:** The error should remain in the sample but a credit of the specific invoice should be given on a detail exam dated the last period of the audit as long as the auditor has verified tax was remitted (as indicated above in the avoidance of double taxation section).

### ***Deleted as an error in the sample***

Example 1—The seller billed and collected tax from the customer within a reasonable period from the date of sale and BEFORE receiving notification from the Comptroller of an upcoming audit.

Example 2—The purchaser accrued tax within a reasonable period from the date of sale and BEFORE receiving notification from the seller that the transaction was scheduled in the seller's audit.

Example 3—The purchaser accrued tax within a reasonable period from the date of sale and BEFORE receiving notification from the Comptroller of an upcoming audit.

**Solution:** The auditor should remove the error completely from the sample errors when a taxpayer has demonstrated due diligence by paying or accruing tax within a reasonable period from the time of sale.

### Summary

- If tax is being paid or accrued after-the-fact as a result of an upcoming or ongoing audit, the item should remain in the sample errors but credited on a detail exam (if remitted to the State).
- If tax is being paid or accrued within a reasonable period from the date of sale and before notification of an upcoming or ongoing audit, the item should be deleted totally from the sample errors.

## Bad Debts

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Bad debts should not be projected as errors in a sample but treated as an extraordinary transaction (i.e., removed from the errors, sample base, and population base). The only exception to this policy is when the whole population base is comprised of bad debts. Clear documentation of the original sale should be provided, including the customer's name, address, the date of the original sale, the amount that the purchaser contracted to pay, all charges whether taxable or nontaxable, and any payments or credits that are applied to the account of the purchaser. Additionally, evidence should be provided that the uncollected amount has been designated as a bad debt in the books and records and that the amount has been or will be claimed as a bad debt deduction for income tax purposes. In the event that a taxpayer is on the cash basis for federal income tax purposes but accrual basis for sales tax purposes, the sale would not have been reported to the Internal Revenue Service (IRS). Therefore, documentation must be retained showing that the sale is not collectible.

## Credit Memos

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Credit memos for returns and allowances appearing in the sample should be scheduled as credits in the sample base. Therefore, the sample base and population base remain homogeneous (assuming the population base includes credits). These credits, however, are not scheduled in the error exam unless the credit was given in error (e.g., acceptance of an invalid certificate); in this case, the credit would be scheduled as positive amount in the error exam.

If the population base does not include credits, the credits should not be scheduled or included in the sample base. (Normally this occurs when credit memos are issued on a separate invoicing sequence.) The key is to ensure that credits are treated the same in the sample base and population base.

## Tax-Only Credit Memos and Invoices

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If tax-only credit memos or invoices are not included in the population (i.e., the debit entries are entered only in the tax accrual account), a separate examination and projection should be performed. Tax-only credit memos or invoices should be compared to resale/exemption certificates. If errors are noted, a projection should be made against related credit memos or debit entries into the tax accrual account.

If tax-only credit memos or invoices are included in the population (generated in the normal course of business) and found to be errors in the sample base examination, they can be included and projected within the sample.

If performing a manual sample (transactions, clusters, or time periods), the auditor should use the tax-only amount to calculate an amount subject to tax (tax amount divided by the tax rate), and this amount subject to tax will be used as the error and sample base amounts. The tax-only amount will remain, as is, in the sample and population bases; it does not need to be removed; it is simply being used for calculation purposes. Generally, the population base is not adjusted because it should already include the amount subject

to tax dollar value. However, if the tax-only credit memo occurred near the beginning of the audit period, it is possible that the original amount subject to tax dollar value was included on an invoice dated prior to the beginning audit period and is not part of the population base; therefore, in this case, the population base would need to be adjusted due to the timing difference.

If performing a dollar-stratified sample (CAMS), the same basic principles apply with a few modifications. The auditor should calculate the amount subject to tax (tax amount divided by tax rate). The amount subject to tax will be added to the errors in the applicable stratum for that particular dollar value and manually added to the sample base amounts. The tax-only amount will remain in its dollar stratum; it does not need to be removed. Generally, the population base is not adjusted because it should already include the amount subject to tax. However, if the tax-only credit memo occurred near the beginning of the audit period, it is possible that the original amount subject to tax dollar value was included on an invoice dated prior to the beginning audit period and is not part of the population base; therefore, in this case, the population base would need to be adjusted due to the timing difference.

### Summary

- Divide the tax amount by the tax rate to calculate the amount subject to tax.
- Use the calculated amount subject to tax as the error and sample base amounts.
- Retain the tax-only amount in the sample and population bases.
- Do not adjust the population base unless timing differences exist.

### Example 1

Facts: The tax-only credit memo of \$24.75 was selected in the sample of Stratum A, and the auditor determined that it was issued in error.

Appearance of original sample:

Stratum	Low Range Amount	High Range Amount	Sample Base Amount	Sample Base # of Items	Population Base Amount	Population Base # of Items
A	0.01	200.00	9,550.00	150	845,000.00	12,465
B	200.01	1,200.00	53,125.00	125	1,820,000.00	4,095
C	1,200.01	5,000.00	253,500.00	125	1,675,000.00	775
D	5,000.01	max	1,475,000.00	160	1,475,000.00	160

If Stratum A contained a tax-only credit memo of \$24.75 in the sample base, and the tax rate was 8.25 percent, \$300.00 ( $\$24.75 / 8.25$  percent) would be added to Stratum B since \$300.00 is within the dollar range of Stratum B.

Appearance after adjusting for the tax-only credit memo: (Changes in **bold**)

Stratum	Low Range Amount	High Range Amount	Sample Base Amount	Sample Base # of Items	Population Base Amount	Population Base # of Items
A	0.01	200.00	9,550.00	150	845,000.00	12,465
B	200.01	1,200.00	<b>53,425.00</b>	<b>126</b>	1,820,000.00	4,095
C	1,200.01	5,000.00	253,500.00	125	1,675,000.00	775
D	5,000.01	max	1,475,000.00	160	1,475,000.00	160

Note: The \$300 would be scheduled as an error.

Example 2

Facts: The tax-only credit memo of \$24.75 occurred in the first period of the audit period, but the original invoice on which this tax credit was erroneously issued occurred in the month before the first period of the audit, so the population base will also have to be adjusted.

Appearance after adjusting for the tax-only credit memo: (Changes in **bold**)

Stratum	Low Range Amount	High Range Amount	Sample Base Amount	Sample Base # of Items	Population Base Amount	Population Base # of Items
A	0.01	200.00	9,550.00	150	845,000.00	12,465
B	200.01	1,200.00	<b>53,425.00</b>	<b>126</b>	<b>1,820,300.00</b>	<b>4,096</b>
C	1,200.01	5,000.00	253,500.00	125	1,675,000.00	775
D	5,000.01	max	1,475,000.00	160	1,475,000.00	160

## Over-accrual of Use Tax

If the taxpayer has an established use tax accrual system that has been consistently used throughout the audit period, over-accruals noted in the sample should be included as a credit and projected.

## Rate Change Adjustment for Local Tax Projections

Local taxes may require an adjustment when the sample periods include rate changes to the local taxing authorities or a local jurisdiction tax rate goes into effect or is repealed. When an audit containing a sample exam is uploaded, the mainframe computer calculates the error ratio for each taxing jurisdiction individually by dividing the total dollars of the errors for each allocation by the total dollars of the sample base. If a local tax comes into effect during the audit period, no errors will be scheduled prior to the effective date, but the sample base will include the entire audit period, thereby diluting the error ratio.

To replicate the true frequency of occurrence for the error transactions subject to the change in the local tax, scheduled errors dated before the local tax effective date are totaled and entered as a lump sum amount. This record is set-up after the effective date (only subject to the new taxing jurisdiction) thereby overcoming the dilution of the error ratio. However, since the mainframe computer will not project a local tax error in periods before the effective date, there are no excessive taxes assessed with this procedure.

Example:

This example is for purchases of items, from vendors in the city of George West and county of Live Oak. Live Oak did not have a county tax until 0110. At the time of the FOOTNOTE (1) purchases – the Live Oak County tax was not in effect, so there are no County tax allocations. If these sales had occurred after the County tax became effective, the county jurisdiction would have been scheduled for each record.

The transactions shown are purchases from vendors in various cities, who did not charge tax. This is an excerpt, from a detail schedule from a sample and projection exam.

Since this is a sample and projection, a single record adjustment is needed to correctly calculate the county tax due. This entry increases the numerator of the county factor to calculate the correct error factor (for county purposes). But it will only be applied for the periods that the county tax was in effect. Therefore, there is no tax being assessed prior to its enacted date. The one-line entry amount (Footnote 2) contains the total taxable amounts from transaction amounts for \$785.00 (Footnote 1) and \$125.00 (Footnote 1), totaling

\$910.00. This total increases the total adjustment for Live Oak County tax that will only be projected from the County effective date forward. This compensates for the dilution that would have occurred.

Trans Type	Taxable Amount	Transaction Date	State	City	County	Transit	SPD	FN
S	226.00	02/05/1998	Y	Dallas	None	None	None	
S	785.00	02/14/1998	Y	George West	None	None	None	1
S	256.00	03/25/1999	Y	San Antonio	None	None	None	
S	222.00	04/13/1999	Y	Dallas	None	None	None	
S	452.00	10/19/1998	Y	Fort Worth	None	None	Fort Worth Crime	
S	115.00	07/01/2000	Y	Three Rivers	None	None	None	
S	450.00	07/03/2000	Y	Austin	None	None	None	
S	125.00	07/18/2000	Y	George West	None	None	None	1
S	60.00	12/02/2001	Y	George West	Live Oak	None	None	
S	910.00	12/21/2001	N	None	Live Oak	None	None	2
S	325.00	12/22/2001	Y	George West	Live Oak	None	None	

Note: If these sales had occurred after the County became effective, the jurisdiction would have been scheduled for each record. Since this is a sample and projection, the single record adjustment was made (FOOTNOTE 2). The single entry transaction contains the total taxable amounts from transactions that would have been subject to county tax (if it had been effective). Footnote 2 forces an adjustment for County tax that will be projected from the County effective date forward.

## Local Tax Law Changes

Beginning September 1, 2007, four law changes affected the assessment of local tax. All of them must be considered when auditing a taxpayer. Handling these changes in a detailed audit is straight forward. When law change items are being projected in a sample, they should be treated separately before and after the effective date of the changes to avoid projecting taxability into a period where tax is not due and to allocate tax to the appropriate jurisdiction.

Law changes (1) through (3) are applicable to the post audit stratification procedures described in this document:

1. Change of Location for Imposition of Transit Taxes
2. Repeal of 2004 Local Sales and Use Tax Collection Changes
3. Nonresidential Repair and Remodeling Services
4. Collecting Local Tax within Emergency Services Districts

Please review the Tax Policy New, July 2007 Legislative Update for specific details <http://www.window.state.tx.us/taxinfo/taxpnw/tpn2007/tpn707.html#issue17>.

The best way to achieve the objectives of avoiding taxation in periods where tax is not due and allocating tax to the appropriate jurisdiction is to design separate samples for the periods before and after the law changes. When this isn't practical, there needs to be one sample with a post-audit stratification handled in the following manner:

Three (3) exams are needed – one for state tax and two for local tax.

- Exam 1 for state tax using the state errors and the sample and population bases for the entire audit period.

- Exam 2 for local tax using the local tax errors, sample base, and population base for the audit period before the law changes.
- Exam 3 for local tax using the local tax errors, sample base, and population base for the audit period on and after the law changes.

The auditor should strongly consider performing two separate samples for a dollar-stratified sample to avoid the necessity of manually creating 2 additional exams for each stratum for the local tax before and after the law changes. The errors, sample base, and population base must be manually segregated for the local tax changes.

Sampling units such as transactions, clusters, or days are recommended over monthly samples. If the smallest possible sample unit does not include periods before and after the law change, a portion of the audit will not have a local tax projection. For example, if a six month sample consists only of periods before September 1, 2007, the audit period after September 1, 2007 will contain no local tax errors to project into the post-law change periods.

All samples require a Notification of Sampling. When using one sample to perform a post-audit stratification, place a generic sentence in the procedures paragraph of the notification which states, “Adjustments subject to local tax law changes will be projected separately.” This will make the taxpayer aware that separate projections will be necessary to ensure the correct tax credit or assessment. When using the preferred method of separate samples for the periods before and after the law change, separate sampling notifications will be needed, and the generic sentence stated above will NOT be used.

When separate samples are performed before and after the law-changes, each sample must evaluate within agency guidelines. When a single sample is performed using a post-audit stratification, the sample will be considered representative as long as the original sample evaluates within agency guidelines.

**Example 1:** An office retailer is inside the city limit and transit authority of Houston. The audit period is 12/01/04-07/31/08. The population base for the audit period is \$8,626,519.53 and consists of 107,655 items. The sample base for the audit period is \$10,113.20 and consists of 125 items.

Exam	Customer	Location	Ref	Amount	Date	State	City	MTA	County	SPD	Delivery Method
1 & 2	STU	SUGARLAND	5542	43.61	02/24/05	Y	HOUSTON	MTAHOU	NONE	NONE	cust p/u
1 & 2	ABC	HUNTSVILLE	2270	84.51	01/03/06	Y	HOUSTON	NONE	CWALKE	NONE	truck
1 & 2	VWI	SUGARLAND	1452	50.04	03/06/06	Y	HOUSTON	NONE	NONE	NONE	truck
1 & 2	GHI	PASADENA	6429	50.87	07/11/06	Y	HOUSTON	NONE	NONE	SCCPAS	truck
1 & 2	DEF	HUNTSVILLE	6748	109.93	08/17/06	Y	HOUSTON	NONE	CWALKE	NONE	truck
1 & 2	JKL	HOUSTON	9210	69.99	06/08/07	Y	HOUSTON	MTAHOU	NONE	NONE	cust p/u
1 & 3	PQR	HUNTSVILLE	7683	88.11	10/22/07	Y	HOUSTON	MTAHOU	NONE	NONE	truck
1 & 3	MNO	TOMBALL	7811	109.93	02/23/08	Y	HOUSTON	MTAHOU	NONE	NONE	truck
1 & 3	XYZ	HOUSTON	4629	139.64	04/03/08	Y	HOUSTON	MTAHOU	NONE	NONE	cust p/u
				\$746.63							

**Entire audit period**

Exam	Jurisdiction	Errors	Sample Base	Error %	Population Base	Amt Subj	Tax Rate	Tax Adj
1	State	\$746.63	\$10,113.20	7.38%	\$8,626,519.53	\$636,872.43	6.25%	\$39,804.53
								\$39,804.53

**Pre 9/1/07**

Exam	Jurisdiction	Errors	Sample Base	Error %	Population Base	Amt Subj	Tax Rate	Tax Adj
2	Houston City	\$408.95	\$5,651.02	7.24%	\$5,561,766.97	\$402,490.98	1.00%	\$4,024.91
2	Houston MTA	\$113.60	\$5,651.02	2.01%	\$5,561,766.97	\$111,805.79	1.00%	\$1,118.06
2	Walker County	\$194.44	\$5,651.02	3.44%	\$5,561,767.97	\$191,369.02	0.50%	\$956.85
2	Pasadena Crime Control	\$50.87	\$5,651.02	0.90%	\$5,561,767.97	\$50,066.56	0.50%	\$250.33
								\$6,350.15

**Post 9/1/07**

Exam	Jurisdiction	Errors	Sample Base	Error %	Population Base	Amt Subj	Tax Rate	Tax Adj
3	Houston City	\$337.68	\$4,462.18	7.57%	\$3,064,751.56	\$231,928.18	1.00%	\$2,319.28
3	Houston MTA	\$337.68	\$4,462.18	7.57%	\$3,064,751.56	\$231,928.18	1.00%	\$2,319.28
								\$4,638.56

**TOTAL TAX DUE \$ 50,793.24**

Sample Evaluation of Example 1: Exam 1 represents the original sample evaluation. While the separate projections for exams 2 and 3 also evaluate in this example, it is not necessary for those to evaluate since the original sample does evaluate within agency guidelines.

Exam	Error	# of Errors	SMP Base	# in SB	Error %	POP Base	# in PB	Ratio	Mean	SMP Risk	Variance
1	\$746.63	9	\$10,113.20	125	7.38%	\$8,626,519.53	107,655	\$636,872.43	\$643,027.62	6,155.19	0.96%
2	\$408.95	6	\$5,651.02	73	7.24%	\$5,561,767.97	69,757	\$402,491.06	\$390,782.54	11,708.52	2.91%
3	\$337.68	3	\$4,462.18	52	7.57%	\$3,064,751.56	37,898	\$231,928.18	\$246,103.78	14,175.60	5.76%

Example 2: The taxpayer is inside the city limit and transit authority of Houston. Purchases are made from both out-of-state and local vendors. The audit period is 12/01/04 through 07/31/08. The population base for the audit period is \$8,626,519.53 and consists of 107,655 items. The sample base for the audit period is \$10,113.20 and consists of 125 items.

Exam	Customer	Location	Ref	Amount	Date	State	City	MTA	County	SPD	Delivery Method
1 & 2	STU	SUGARLAND	5542	43.61	02/24/05	Y	SUGARL	NONE	NONE	NONE	TPP shipped to Houston
1 & 2	ZZZ	OK	5500	43.61	02/24/05	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 2	ABC	HUNTSVILLE	2270	84.51	01/03/06	Y	HUNTSV	NONE	CWALKE	NONE	TPP shipped to Houston
1 & 2	ZZZ	OK	6503	84.51	01/03/06	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 2	VWI	SUGARLAND	1452	50.04	03/06/06	Y	SUGARL	NONE	NONE	NONE	TPP shipped to Houston
1 & 2	ZZZ	OK	6703	50.04	03/06/06	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 2	GHI	PASADENA	6429	50.87	07/11/06	Y	PASADE	NONE	NONE	SCCPAS	TPP shipped to Houston
1 & 2	ZZZ	OK	6700	50.87	07/11/06	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 2	DEF	HUNTSVILLE	6748	109.93	08/17/06	Y	HUNTSV	NONE	CWALKE	NONE	r/p repair
1 & 2	ZZZ	OK	7000	109.93	08/17/06	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 2	JKL	HOUSTON	9210	69.99	06/08/07	Y	HOUSTO	MTAHOU	NONE	NONE	TPP picked up in Houston
1 & 2	ZZZ	OK	9200	69.99	06/08/07	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 3	PQR	HUNTSVILLE	7683	88.11	10/22/07	Y	HUNTSV	NONE	CWALKE	NONE	TPP shipped to Houston
1 & 3	ZZZ	OK	9851	88.11	10/22/07	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 3	MNO	TOMBALL	7811	109.93	02/23/08	Y	HOUSTO	MTAHOU	NONE	NONE	r/p repair
1 & 3	ZZZ	OK	10935	109.93	02/23/08	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
1 & 3	XYZ	HOUSTON	4629	139.64	04/03/08	Y	HOUSTO	MTAHOU	NONE	NONE	TPP picked up in Houston
1 & 3	ZZZ	OK	11924	139.64	04/03/08	Y	HOUSTO	MTAHOU	NONE	NONE	TPP shipped to Houston
				\$1,493.26							

**Entire audit period**

Exam	Jurisdiction	Errors	Sample Base	Error %	Population Base	Amt Subj	Tax Rate	Tax Adj
1	State	\$1,493.26	\$10,113.20	14.77%	\$8,626,519.53	\$1,273,744.86	6.25%	\$79,609.05
								\$79,609.05

**Pre 9/1/07**

Exam	Jurisdiction	Errors	Sample Base	Error %	Population Base	Amt Subj	Tax Rate	Tax Adj
2	Houston City	\$478.94	\$5,651.02	8.48%	\$5,561,767.97	\$471,375.64	1.00%	\$4,713.76
2	Houston MTA	\$478.94	\$5,651.02	8.48%	\$5,561,767.97	\$471,375.64	1.00%	\$4,713.76
2	Huntsville	\$194.44	\$5,651.02	3.44%	\$5,561,767.97	\$191,369.02	1.50%	\$2,870.54
2	Walker County	\$194.44	\$5,651.02	3.44%	\$5,561,767.97	\$191,369.02	0.50%	\$956.85
2	Pasadena	\$50.87	\$5,651.02	0.90%	\$5,561,767.97	\$50,066.56	1.50%	\$751.00
2	Pasadena Crime Control	\$50.87	\$5,651.02	0.90%	\$5,561,767.97	\$50,066.56	0.50%	\$250.33
2	Sugarland	\$93.65	\$5,651.02	1.66%	\$5,561,767.97	\$92,170.89	2.00%	\$1,843.42
								<b>\$16,099.66</b>

**Post 9/1/07**

Exam	Jurisdiction	Errors	Sample Base	Error %	Population Base	Amt Subj	Tax Rate	Tax Adj
3	Houston City	\$587.25	\$4,462.18	13.16%	\$3,064,751.56	\$403,339.93	1.00%	\$4,033.40
	Houston MTA	\$587.25	\$4,462.18	13.16%	\$3,064,751.56	\$403,339.93	1.00%	\$4,033.40
3	Huntsville	\$88.11	\$4,462.18	1.97%	\$3,064,751.56	\$60,516.44	1.50%	\$907.75
3	Walker County	\$88.11	\$4,462.18	1.97%	\$3,064,751.56	\$60,516.44	0.50%	\$302.58
								<b>\$9,277.13</b>

**TOTAL TAX DUE \$ 104, 985.84**

Sample Evaluation of Example 2: Exam 1 represents the original sample evaluation. While the separate projections for exams 2 and 3 also evaluate in this example, it is not necessary for those to evaluate since the original sample does evaluate within agency guidelines.

Exam	Error	# of Errors	SMP Base	# in SB	Error %	POP Base	# in PB	Ratio	Mean	SMP Risk	Variance
1	\$1,493.26	18	\$10,113.20	125	14.77%	\$8,626,519.53	107,655	\$1,273,744.86	\$1,286,055.24	12,310.38	0.96%
2	\$817.90	12	\$5,651.02	73	14.47%	\$5,561,767.97	69,757	\$804,982.11	\$781,565.07	23,417.04	2.91%
3	\$675.36	6	\$4,462.18	52	15.14%	\$3,064,751.56	37,898	\$463,856.37	\$492,207.56	28,351.19	5.76%

**Voided Transactions**

Voided transactions can occur for several reasons. For example, sometimes when a sample is selected using randomly generated page and line numbers, the line number for a particular page is not an actual transaction but is a sub-total or column heading. Occasionally, taxpayers void a transaction because inaccurate information was included. Or, for example, the taxpayer has recorded a zero for the sale because it represents some internal accounting procedure for tracking inventory re-classifications. The auditor has two options for handling voided transactions:

1. If voided transactions occur frequently, select additional sample items to supplement the number of voids in the original sample base. For example, 32 of the 470 items in the original sample selection are voided transactions. The auditor would, at a minimum, increase the number of items in the sample se-

lection (i.e., sample base) by 32 transactions. A total of 502 (470 + 32) transactions would be reviewed. *Note: In selecting these additional items, the State prefers using random sample selection to avoid all bias. However, there may be situations (e.g., cluster sampling) where it would be acceptable to select the next available invoice to supplement a void.*

2. If voided transactions occur infrequently, do not supplement the sample base. For example, the 470 items in the sales sample selection (i.e., sample base) included 5 voided transactions. As long as the items of interest are close to 250, increasing the number of items in the sample selection would not be necessary. The sample base would remain at 470 transactions.

*Note: Sample and population bases must remain homogenous; we cannot adjust the sample base (amount & count) without adjusting the population (amount & count). Supplementing a void does not mean disregarding a void. Even though the void may have an amount of zero, it should be included in the total count of sample base items for calculating the sample base average and mean estimate when the population base count also includes voided transactions. Alternatively, if the voided transactions are removed from the sample base count, then all voided transactions should be removed from the population base count as well.*

## Missing Invoices

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Missing invoices are taxed at 100 percent unless the taxpayer provides sufficient alternative evidence. For example, a taxpayer purchased office supplies and paid tax to that retailer throughout the audit period. A sample item was selected for the particular office supply retailer, but the invoice was missing. If the taxpayer can provide other invoices for the same type of items from the same office supply retailer that show where tax was consistently paid throughout the audit period, the missing invoice selected in the sample will be presumed to have tax paid. Taxpayers are required to maintain books and records for periods in statute.

## Fiscal calendar vs. reporting calendar

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The auditor should ascertain how the taxpayer has reported fiscal calendar amounts on the tax returns when compiling population and sample bases. The following guidelines have been established for taxpayers with a fiscal calendar that is different from the reporting calendar:

1. For accounting periods ending the 1st through the 10th day of the month, the due date will be the 20th of that month (i.e., if the accounting periods ends April 1 through April 10, the data is to be reported on the March return due April 20).
2. For accounting periods ending on the 11<sup>th</sup> through the last day of the month, the due date will be the 20<sup>th</sup> of the next month (i.e., if the accounting period ends April 11 through April 30, the data is to be reported on the April return due May 20).
3. For 13-period accounting systems, two accounting periods must be combined on one return since the State's computer system will accept only 12 monthly returns per calendar year.

## One Error

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When performing a dollar-stratified sample only, it is possible to project one error if frequency of occurrence can be proven.

### Example

Facts:

- One expense group has 3 sampled strata and 1 detail stratum.
- Stratum A has one error for taxable repair/remodeling from ABC Contracting

- Stratum B has 5 errors—1 for tangible personal property purchased out-of-state, 2 for taxable services, and 2 for taxable repair/remodeling from DEF Contracting.
- Stratum C has 9 errors—3 for tangible personal property purchased out-of-state, 5 for taxable services, and one for taxable repair/remodeling from XYZ Contracting
- Stratum D has 3 errors—1 for tangible personal property purchased out-of-state, 1 for taxable service, and 1 for taxable repair/remodeling from XYZ Contracting

Conclusion: Stratum A can have the one error projected because frequency of occurrence has been established for taxable use purchase errors in Stratum B, C, and D.

One error can **never** be projected in a manual sample.

## Taxpayers' Samples

Permitted taxpayers who have erroneously accrued and remitted sales and use tax on purchases to the State on non-taxable items are allowed to submit samples to determine the amount of overpayment. The sampling method used by the taxpayer must comply with generally accepted sampling methods as approved by the Comptroller. Therefore, ALL of the guidelines mentioned throughout this manual must be followed. (**§ 151.430 provides the taxpayer the authority to perform independent samples for overpaid amounts on sales and use taxes only and requires that the records used by the taxpayer be made available to the Comptroller upon request.**)

### Reminders:

1. *Year samples do not meet state guidelines.*
2. *Assets and expenses must be separate samples.*
3. *Tax-paid and tax-free populations should be separated whenever possible; otherwise, additional items must be sampled.*
4. *Separate samples must be performed for multiple entities; one sample cannot be used for two or more entities.*
5. *No independent projections will be allowed for credits in periods where records are not available for the State's review.*
6. *Samples must be randomly selected utilizing a program that will allow the sample to be recreated and expanded so the state can verify the random selections. If the taxpayer/consultant does not have such a program they may request that the Comptroller select the sample for them and provide the necessary documentation for the sample.*
7. *All samples must be selected from the entire period to which the projection will be made.*
8. *All samples must evaluate within the state's policy guidelines.*

If these guidelines have not been followed, the refund will be returned to the taxpayer.

## Checklist – Computerized or Manual (not all-inclusive)

### Computerized sampling methods:

1. **Verify account balances** of computer data are reconcilable to a hard-copy summary report **by account by period** from the taxpayer (e.g., general ledger, accounts payable journal). Do not use a hard-copy report generated by the computer file provided.
  - a. Obtain a list of all accounts of interest to be projected.
  - b. Obtain a hard copy of the financial statements to reconcile accounts of interest
  - c. Compare accounts payable journals, general ledgers and financial statement hard-copy data for accounts of interest to control totals of computer data using Access, Excel or a database sort & total feature to assure all information is complete and present.

4. **Review computer data for validity.** For example, make sure that an “invoice date” field is not actually a “ship date”. If errors are noted, the auditor should return the data to the provider to have it corrected.
5. **Verify for duplication.** The criteria used to define each population (group) must be exclusive and unique so that records cannot be duplicated among groups. Request that each population base transaction includes a unique identifier number, stratum identification, and sample order selection number. Verify that the unique identifier number assigned is not duplicated among the different groups or strata.
6. **Verify prior or current audit and/or refund.** The taxpayer can address the same transaction if it was assessed in the prior audit but not if it was credited (either in a detailed exam or in a population that had credits projected) or a credit was requested and denied.
  - a. **Obtain backup documentation** for any refunds received directly by the taxpayer from vendors. If any particular vendor comprises a substantial amount of the refund, call the vendor and ask if the customer has received a refund or credit memo.
  - b. **Review the taxpayer history** for any warrants previously issued and for amended returns. Check prior and current audits for credits.
  - c. **Ask for an account dump of the sales tax payable account** from the beginning refund period through the most current time period (which probably will extend beyond the current audit/refund period) to ensure that refunds have not already been taken. **Request detailed documentation** to support any material tax reversal amounts within the dump. **Assess any unsupported reversals** as tax collected/accrued not remitted.
  - d. **Review miscellaneous revenue accounts** or other general ledger accounts to determine whether credit has already been received.
5. **Verify the population transactions are for the refund period only.** The invoice date is used for statute tolling purposes. Any additional periods must be submitted via a new refund request.
6. **Review the population detail for duplicate transactions,** i.e., invoice numbers. While a population may contain duplicate transactions due to the allocation of one invoice to various expense accounts, an invoice with the same dollar value and account number should be questioned.
7. **Verify that transactions presented do not include other entities,** i.e., different taxpayer numbers. Merged company transactions may be included only as of the merger date. Closely review report headings and invoice letterhead for slight variations of taxpayer names, e.g., ABC Co. versus ABC LP.
8. **Ask if credit transactions are included in the population base.** If not included, request a detailed copy (preferably electronic) of the original data from which the population was generated to identify credits that may be reversals of items in the sample base.
9. **Verify the validity of the sample selection process** by requesting an expansion of the sample and identifying the seed number. Vary the expanded percentage for validation purposes. The seed number used to generate the sample should be provided so that, if the sample is regenerated, the same results will occur when compared with the original sample.
10. **Review all transactions selected in the sample** and not just those transactions applicable to the refund. If all transactions in the sample are not made available for review, the sample is considered invalid, and the refund should be denied.
11. **Trace refund transactions** (tax paid to vendor or tax accrued) in the sample to the sales/use tax accrual dump to verify whether or not credit was taken or accrual was reversed on the transaction.
12. **Verify that the variance percentage** for each stratum for each group is within **8 percent** and is substantially similar. Also, remember, regardless of how the dollar ranges were stratified, either absolute or actual, the variance percentage is based on actual value.

#### **Manual sampling methods:**

1. **Verify what account balances** comprise the **population**.
2. **Verify prior or current audit and/or refund.** The taxpayer can address the same transaction if it was assessed in the prior audit but not if it was credited (either in a detailed exam or in a population that had credits projected) or a credit was requested and denied.

- a. **Obtain backup documentation** for any refunds received directly by the taxpayer from vendors. If any particular vendor comprises a substantial amount of the refund, call the vendor and ask if the customer has received a refund or credit memo.
  - b. **Review the taxpayer history** for any warrants previously issued and for amended returns. Check prior and current audits for credits.
  - c. **Ask for an account dump of the sales tax payable account** from the beginning refund period through the most current time period (which probably will extend beyond the current audit/refund period) to ensure that refunds have not already been taken. **Request detailed documentation** to support any material tax reversal amounts within the dump. **Assess any unsupported reversals** as tax collected/accrued not remitted.
  - d. **Review miscellaneous revenue accounts** or other general ledger accounts to determine whether credit has already been received.
3. **Verify the population transactions are for the refund period only.** The invoice date is used for statute tolling purposes. Any additional periods must be submitted via a new refund request.
  4. **Review the population detail for duplicate transactions**, i.e., invoice numbers. While a population may contain duplicate transactions due to the allocation of one invoice to various expense accounts, an invoice with the same dollar value and account number should be questioned.
  5. **Verify that transactions presented do not include other entities**, i.e., different taxpayer numbers. Merged company transactions may be included only as of the merger date. Closely review report headings and invoice letterhead for slight variations of taxpayer names, e.g., ABC Co. versus ABC LP.
  6. **Ask if credit transactions are included in the population base.** If not included, request a detailed copy (preferably electronic) of the original data from which the population was generated to identify credits that may be reversals of items in the sample base.
  7. **Verify the validity of the sample selection process** by requesting an expansion of the sample and identifying the seed number. Vary the expanded percentage for validation purposes. The seed number used to generate the sample should be provided so that, if the sample is regenerated, the same results will occur when compared with the original sample.
  8. **Review all transactions selected in the sample** and not just those transactions applicable to the refund. If all transactions in the sample are not made available for review, the sample is considered invalid, and the refund should be denied.
  9. **Trace refund transactions** (tax paid to vendor or tax accrued) in the sample to the sales/use tax accrual dump to verify whether or not credit was taken or accrual was reversed on the transaction.
  10. **Verify that the variance percentage** between the sample and population base is within **15 percent**.